MASTERY ACHIEVEMENT OF MILDLY HANDICAPPED STUDENTS ON FLORIDA'S STATEWIDE STUDENT ASSESSMENT TEST, PART II

By

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Abstract of Dissertation Presented to the Graduate School
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Doctor of Philosophy

MASTERY ACHIEVEMENT OF MILDLY HANDICAPPED STUDENTS ON FLORIDA'S STATEWIDE STUDENT ASSESSMENT TEST, PART II

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The development of many large scale minimum competency testing programs throughout the country has caused concern for the special testing needs of handicapped students. Participation of handicapped students in statewide minimum competency testing programs was the basic issue under investigation in this study. Using equal samples (n=300 each) of handicapped (emotionally handicapped, specific learning disabled, and educable mentally handicapped) and nonhandicapped students, the investigator made comparisons among handicapping conditions and between handicapped students and their nonhandicapped peers on specific skills and standards included on Florida's Statewide Student Assessment Test, Part II (SSAT-II).

The investigator analyzed the data included in this study by reporting both the percentages of mastery and raw scores achieved by

equal random samples of four groups of students on skills and standards included on the SSAT-II. A second comparison was made among the four samples using the chi-square test of association. This nonparametric analysis strategy was employed to determine the association between categories of samples and responses (passed, failed, not tested). Due to the size of the four samples (n=300 each group) and the large variation among the performances of certain samples, a difference of more than 10 percentage points on skills achieved was determined by the investigator to indicate significance without further statistical analysis. With this criterion, a second chi-square procedure was necessary only in comparing the samples of emotionally handicapped (EH) and specific learning disabled (SLD) students' skill achievement.

The chi-square analysis resulted in significant association between categories and responses. It was determined that nonhandicapped students fared better than those handicapped students on all measures with results for SLD and EH students more closely approaching those of the nonhandicapped sample. Weak performances and significantly lower rates of achievement prompted concerns about the inclusion of educable mentally handicapped (EMH) students in minimum competency testing programs.

CHAPTER I
INTRODUCTION

In the mid-1970s state legislatures thrust minimum competency testing on public schools to insure that all high school graduates attained a given level of literacy (Klein, 1984). The purpose of this research was to investigate this mandated educational assessment program as indicated by a comparison of the performance of three equal samples of mildly handicapped and one equal sample of nonhandicapped students on Florida's State Student Assessment Test, Part II. To complete this type of research it was necessary to look at current questions confronting educators involved in the implementation of such innovative programs. These questions included (a) background or need for such programs, (b) differing interpretations of such programs, (c) legal concerns, (d) the role of handicapped students in these programs, and, finally, (e) the State of Florida's interpretation of minimum competency testing.

Background or Need for Minimum Competency Testing

The enthusiasm for competency tests stems from a belief that the testing of essential skills and competencies will help raise academic standards and increase educational achievement (Haney & Madaus, 1978). "The program was not set up as a new set of innovations--another bandwagon--but as a return to those roots that had us worried" (Enoch,

1978, p. 160). The rhetorical appeal of an educational restoration rested on the widely accepted premise that the innovations of the 1960s and early 1970s had succeeded in diluting the quality of public schooling. Schools were accused of substituting "frills and fancies" for the "sweat of learning" (Rickover, 1979, p. 160), and a return to the roots of American education, which were thought to have been compromised, soon came to mean a return to basics which could be effectively measured. It was within this context that legislation designed to promote the efficient assessment of teacher and student competencies proliferated and, by the end of the 1970s, minimum competency testing (MCT) was implemented in a majority of states (Pipho, 1979b).

Differing Interpretations of Minimum Competency Testing

Generalizing about the impact of minimum competency testing is complicated by the fact that such testing programs differ both within and among the states. But all such programs share certain characteristics. First, each program requires students to compete against a cutoff score that has been chosen as the standard below which students may not score and still be considered competent in the subject matter covered by the test. Second, the tests have important consequences for the test takers. Consequences to students who achieve the minimum standards may range from the receipt of a high school diploma, or certificate of special recognition, to promotion from grade to grade. Consequences for not meeting the standards include compulsory enrollment in remedial classes, grade

retention, or the receipt of a certification of school attendance instead of a high school diploma (Perkins, 1982).

Individual states differ in their articulation of competency requirements. Florida, Colorado, and Utah exemplify the range of differences in this regard. Florida legislation imposes uniform statewide standards for testing of basic skills and functional literacy in a competency certification program encompassing assessment, grade promotion, and graduation. Colorado legislation makes the local district requirement of competency tests contingent upon certain provisions of benefit to the student. A state board ruling in Utah establishes a competency-based graduation requirement; localities formulate standards, measurements, and grades (Baratz, 1980). As a natural outgrowth of such wide range educational program reforms, significant legal and fundamental fairness problems arise. These problems are inherent in many MCT programs, particularly those that impose responsibility or serious sanctions directly on students for test failure (McClung, 1978). For example, early results from minimum competency testing programs indicate that members of disadvantaged minority groups perform less well overall than do white, middle-class students. Competency tests used to make critical decisions about awarding diplomas or grade placement may, therefore, result in new forms of racial segregation, discrimination, and the denial of federally guaranteed constitutional and statutory civil rights (Palardy, 1984; Pullin, 1980).

Legal Concerns

Only limited attention, legally or academically, has been paid to the special problems of handicapped students in mandated minimum competency programs (McClung & Pullin, 1978). Federal requirements concerning the education of the handicapped (The Education of All Handicapped Children Act, PL 94-142) do not address the issue of mandated minimum competency testing; and no policy interpretations, either formal or informal, have been issued by the Department of Education concerning the role of mandated statewide minimum competency testing in the education of handicapped students under the federal standards. Consequently, the questions surrounding minimum competency testing and the participation of handicapped students are multifold.

Handicapped Students in Minimum Competency Testing Programs

Among the many issues involved with handicapped students participating in minimum competency testing programs are the nature and extent of accommodations afforded to exceptional students (Morrissey, 1980), the inclusion of minimum competency test requirements within individual educational plans (Danielson, 1980; Fenton, 1980), and the difficulty that schools will have in assuring that pupils attain a given level of performance while also providing for the special needs of the handicapped (Ross & Weintraub, 1980). These concerns are further complicated in reference to the impact that MCT programs will have on the long term education and economic prospects of handicapped individuals (Franzosa, 1984). Ewing and Smith (1981) concur with these issues in suggesting the requirement of some states that high

school diplomas be denied to MCT "failers" is likely to have a stronger adverse effect on exceptional students than on their nonhandicapped peers. Even with this controversy, however, a majority of states have some form of minimum competency testing program for all students (Pipho, 1983).

Florida's Interpretation of Minimum Competency Testing

Through the Educational Accountability Act of 1976, the State of Florida established certain minimum competencies in the basic skill areas of reading, writing, and mathematics in grades 3, 5, 8, and 11 which would be assessed (State Student Assessment Test, Part I, SSAT-I). The legislation also provided for the development and administration of an additional test for 11th grade students which would measure the application of the basic skills to practical problems (State Student Assessment Test, Part II, SSAT-II). It is this second part of the student assessment test that must be passed in order for students to qualify for a standard diploma.

This investigation primarily focused on Part II of the Florida State Student Assessment Test (SSAT-II). The investigation analyzed the mastery achievement of four equal samples of students on the 1984 SSAT-II. Comparisons were made between handicapped and nonhandicapped students and among students included in the individual handicapping conditions.

The remainder of this chapter supplies a framework for this research. Those sections include (a) the problem, (b) the purpose, (c) justification for the study, (d) limitations and delimitations of the study, (e) definitions, and (f) summary of Chapter I.

Statement of the Problem

In 1976 (Florida Educational Accountability Act), the Florida Legislature required all students to master (SSAT-I) and apply (SSAT-II) specified minimum performance standards in reading, writing, and mathematics in order to receive a standard State of Florida diploma (Grise, 1980). Although modifications in test format have been made to accommodate certain handicaps, handicapped students are tested and expected to achieve mastery on the same content as regular education students. Ample information can be found in the literature on minimum competency testing; however, little information concerning the achievement of mastery among handicapped students is available. The relationship of the levels of mastery achievement among three samples of mildly handicapped students and one sample of nonhandicapped students is the problem addressed in this research.

Purpose

One of the stated purposes of the Florida Statewide Student Assessment Program is to collect and report information about student achievement, on selected basic skills, in order to make decisions on educational policies and practices. Furthermore, the information from the assessment program is designed to make a contribution to the success of students (Florida Statewide Assessment Resource Manual, 1979). However, little, if any, data have been reported making comparisons and analysis of one particular population with another. This research was designed, through specific questions, to add necessary comparison data, thus aiding in the program's goal of improved educational policies and practices and better decision making.

Justification

Minimum competency testing to decide grade to grade promotion or graduation from high school continues to be one of the most explosive, as well as controversial, issues on the educational programming front (Brickel, 1978; Haney & Madaus, 1978; Kohlfield, 1984; Salganik, 1985). This kind of controversy, however, has not affected the popular support for minimum competency testing from state legislators and members of state boards of education. According to a report by the National Association of State Directors of Special Education (1979), as of January 1, 1979, 36 states (72%) had some sort of competency testing for both elementary and secondary education. Of those 36 states, 17 states (34%) have linked minimum competency testing with graduation from high school. States without legislation were, at that time, considering such enacting requirements either for promotion or graduation (Neill, 1979).

Pipho (1983) supplied more recent information on the individual states. Of the 40 states that require competency tests in the basic skills, 19 states require students to pass the test in order to receive their diplomas (a requirement either in effect now or to become effective at a specified date in the future), three other states link the passing of the test to graduation (although not dependent on passing the test), and in the requirements of the remaining 18 states, diploma sanctions are ruled out or not mentioned.

This influential educational movement represents major practice with serious implications for many handicapped students. However,

in the abundance of information on minimum competency testing, little is available on handicapped students. Some issues have been raised but few have addressed comparisons of handicapped with nonhandicapped students in terms of providing guidance in implementing minimum competency testing schemes that do not deny handicapped students an equal opportunity for an appropriate education.

Among the many issues of how handicapped students should be accommodated in minimum competency testing, the following three pertinent questions are included:

1. To what extent should handicapped students be included or excluded?
2. What criteria should be used for inclusion or exclusion?
3. Are the implications of minimum competency testing for handicapped students critical?

Care to assure that programs are designed and implemented fairly and without discrimination should be given to those programs accommodating handicapped students. If this assurance is not considered, then this popular movement is certain to have a negative impact on the lives of many handicapped people (Ewing & Smith, 1981).

Inclusion or Exclusion

Should handicapped students be made to achieve the same proficiency on minimum competency measures as regular education students? This question is complex and extremely debatable. Educators cannot oppose minimum competency testing in principle; however, it becomes questionable in terms of categorically requiring handicapped students to master the proficiency standards required of

nonhandicapped students (Patton, Payne, & Beirne-Smith, 1986). The concern of educators has added strength when such mastery is the criterion for graduation (McClung, 1978).

The heterogeneity of handicapped populations, in terms of educational abilities, prohibits reasonable expectation of systematic inclusion or exclusion of students. Such a narrow approach would be insensitive to the vast differences in handicapped students. Different levels of functioning cannot be expected to result in equal levels of achievement.

It appears to be reasonable that minimum competency testing, as it applies to handicapped students, should be administered within a framework that is meaningful to each student. The nature and extent of participation would need to be decided on an individual basis. Some handicapped students would not be excluded whereas others would need different standards of proficiency, and still other handicapped students would have little, if any, chance of achieving the necessary proficiency (Pullin, 1980). Educators need more information on how to establish different standards of minimum competency testing for handicapped students to be used as a basis for making these kinds of decisions, especially when it affects promotion or graduation (Olsen, 1980).

Limited consensus can be found among states that have mandated minimum competency testing requirements for high school graduation. Three policies most cited as (a) inclusion of all handicapped students, (b) exclusion of all handicapped students, and (c) selective inclusion or exclusion based on handicapping condition. Furthermore,

in 1979, the National Association of State Directors of Special Education reported of the 17 states in which minimum competency tests were required for graduation, six states (35%) required all or selected categories of handicapped students to take the competency test. Eleven states (65%) had not specified inclusion or exclusion.

Criteria Used to Determine the Accommodation of Handicapped Students

When making decisions for accommodation, several factors should be considered:

1. The inclusiveness of the term "handicapped students."
2. The heterogeneity within each category of handicaps.
3. The wide variation in curriculum and instructional goals specific to a particular handicap.
4. The examination of the purpose of competency testing programs before making decisions regarding handicapped students.

It is increasingly important for legislatures, state boards of education, and local boards of education to recognize the inclusiveness of the term "handicapped." The Education of All Handicapped Children Act (1975) describes no fewer than 11 categories of handicaps; speech handicaps, mental retardation, hard-of-hearing, deaf, visually handicapped, severely emotionally disturbed, orthopedically handicapped, other health impairments, deaf-blind, multihandicapped, and specific learning disabled. It becomes evident that the term "handicapped" is too broad to legislate overall policy concerning minimum competency testing programs and handicapped students.

When planning for accommodating handicapped students in minimum competency testing programs, two groups of accommodations are cited;

1. handicapped students who require modification of the testing environment (Grise, 1980), and
2. handicapped students who require modification of curriculum and instructional goals (Serow & O'Brien, 1983).

For the group that requires modification of the testing environment, curricular and instructional goals remain essentially the same. The same proficiency and competency as for regular students could be used in making graduation decisions or grade promotions. Some students would need differential assessment procedures appropriate for particular handicaps (for example, tests for visually impaired students would have the same content but tape recorders rather than paper and pencil would be employed). Such modifications would not be of paramount significance if the performance on a specific skill is the primary concern, not how the test was administered.

For those handicapped students who require modification of curricular and instructional goals, educational programs often differ noticeably from those of their nonhandicapped peers. These handicapped students are characterized by generally lower achievement potential; consequently instructional goals focus on lower levels of skills development. Such modifications result in an inadequate match between the handicapped students' programs of instruction and level of item difficulty on the competency test. When the competency test

does not reflect content and level of instruction, then the equity of the test's outcome is suspect.

One approach in addressing this type of accommodation is to test the same skill but at a lower level of proficiency. The rationale of using differential standards of proficiency is that the procedure takes into consideration different levels of achievement potential between handicapped and nonhandicapped students. If lower proficiency standards are employed, these lower standards could be employed to decide graduation with a standard diploma.

For students with severe handicaps, the educational program is so vastly different from the program for nonhandicapped students, skill achievement would not approach the standards needed to participate in minimum competency testing programs. In these cases, total exemption would appear to be an appropriate determination and the adverse effects would, therefore, be minimal.

The purpose of competency testing is another concern when considering the inclusion or exclusion of handicapped students. Ewing and Smith (1981) state that if the competency testing program is used for diagnostic and remedial purposes, then handicapped students should be exempt. Each student's individual educational plan (IEP), as mandated by PL 94-142, defines remediation for a student based on diagnostic information. Conversely, if minimum competency testing is the basis of promotion and graduation, a formal process should be used to establish expectations regarding the appropriateness of the test for a particular handicapped student. Individual determination

should be made as part of the IEP process and used as a basis for promotion and graduation. These determinations should be the responsibility of the individual educational planning committee (also established by PL 94-142). This individualized approach, by the planning committee, would maximize participation in the decision-making process and decrease chances of having minimum competency testing penalize handicapped students.

Implications for Handicapped Students

A uniform competency testing requirement as a prerequisite for a high school diploma is a potentially harmful phenomenon emerging from the minimum competency movement. This practice of linking the high school diploma (certification) to competency requirements appears to be especially harmful for handicapped students (Ross & Weintraub, 1980). Quite possibly numerous students will suffer unnecessary humiliation as a result of test requirements that are unfair and discriminatory. It is also likely that some handicapped students will drop out rather than suffer the humiliating experience and stigmatizing effect of receiving a differentiated diploma or certificate of attendance that, to handicapped students, would appear to have the same effect as labeling the students incompetent. Such labeling could affect how the rest of society views the handicapped students. Postsecondary education training programs and employment are also likely to be adversely affected (Franzosa, 1984). Thus, denial of a standard diploma could cause a number of economic and academic deprivations for handicapped individuals when compared to nonhandicapped individuals and chances are that linking diplomas to competency requirements could create more social problems than benefits.

In an indirect manner, unfair and discriminatory competency testing practices could challenge the legitimacy of special education programs for handicapped students (McCarthy, 1983). The implications seem to be if handicapped students cannot achieve skills commensurate with those of their nonhandicapped peers, perhaps special education programs are of limited value in terms of preparing for success in adulthood. Some speculate that not all skills needed in adulthood are basic skills (Franzosa, 1984). High school programs for handicapped students often focus on developing social, interpersonal, and vocational skills. A primary focus on academics would restrict the handicapped student to an impractical curriculum (Gillet, 1980). Thus, many handicapped students would become casualties of an education practice that was conceived with the nonhandicapped student in mind.

The development of minimum competency testing programs that take handicapped students into serious consideration is a major challenge to the success of the competency testing movement. Treatment of handicapped people has improved tremendously in the past few years as society has evidenced a sense of moral obligation to help persons who have deficiencies that prevent them from achieving an ordinary level of competency. Consequently, it does not appear likely that an educational practice that does not have practical application and meaningful implications for handicapped people will receive sanction from society.

Concluding Statements

In Florida, one of the stated purposes of the state student assessment program is to collect and report information about student achievement on selected basic and practical skills in order to make decisions on educational policies and practices. If this program is to meet those stated objectives for improvement in decision making, it becomes essential that comparisons between handicapped and nonhandicapped students' performances on minimum competency tests by made in order to add meaningful data concerning educational policies and practices.

Limitations

This study was limited to 10th grade mildly handicapped (high prevalence) and nonhandicapped students enrolled in the State of Florida's public school system. Caution should be exercised in extrapolating the results to other geographic areas or age levels. The vague definitions of mildly handicapped students and the specific criteria used in the 67 school districts of the State of Florida for placement of students into special education classes may contribute to differences from other students similarly labeled by different criteria. (Appendix A contains eligibility criteria used in two districts, Alachua and Broward Counties, in the State of Florida.)

Delimitations

The scope of this study has been delimited in a number of ways. First, the study has been restricted geographically to the State of Florida. Second, the study was conducted with 10th grade mildly handicapped (high prevalence) and nonhandicapped students. Third, the

students must have participated in the 1984 statewide student assessment program. And, finally, the students must have selected the standard diploma as the certificate of graduation.

Definitions

Mildly handicapped (high prevalence). For purposes of this study, mildly handicapped refers to students who are members of special education programs in the State of Florida. They have been labeled educable mentally handicapped (EMH), specific learning disabled (SLD), and emotionally handicapped/disturbed (EH/ED).

Mental retardation (mentally handicapped).

> Mental retardation refers to significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior, and manifested during the developmental period. (Grossman, 1973, p. 5)

Specific learning disability.

> Specific learning disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimum brain dysfunction, dyslexia, and developmental aphasia. The term does not include learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage. (U.S. Office of Education, 1977b, p. 65083)

Emotional disturbance.

> The term means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance: (a) an inability to learn which cannot be explained by intellectual, sensory, or health factors; (b) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers;

> (c) inappropriate types of behavior or feelings under normal circumstances; (d) a general pervasive mood of unhappiness or depression; or (e) a tendency to develop physical symptoms or fears associated with personal or school problems. The term includes children who are schizophrenic or autistic. The term does not include children who are socially maladjusted, unless it is determined that they are seriously emotionally disturbed. (U.S. Office of Education, 1977a, p. 42478)

The following definitions are adapted from the State of Florida Department of Education, Florida Statewide Assessment Resource Manual (1979).

Basic skills. The rudiments or fundamentals of academic learning defines the term basic skills. These skills include the primary elements of reading, writing, and arithmetic such as number concepts, reading for the main idea, simple punctuation, etc.

Florida accountability. Legislation initially enacted in 1971 and updated several times but particularly in 1976 provided for assessing the educational programs offered by Florida public schools through the establishment of statewide basic skills objectives and subsequent testing of student achievement of objectives at various grade levels. The 1976 legislation expanded the earlier legislation a nd provided for (a) the assessment of students in grades 3, 5, 8, and 11; (b) a district system of promotion; (c) a state-level management information system; (d) passage of a test of functional literacy as a requirement for receiving a high school diploma; and (e) a remedial program for students who do not master the required minimum performance standards.

Minimum competency test. The minimum competency test measures a particular minimum number of skills (competencies) necessary for functioning effectively in the task area which the test measures.

Minimum student performance standard. The performance standards (broad content areas) were ultimately adopted based on the state objectives established as a result of the 1971 legislation and revised in 1974.

Skills. Two or more skills generally relate to each minimum performance standard. Each skill, in turn, is measured by several questions or items, usually four or five.

Exceptional students. Section 232.246, Florida Statutes, made provision for modification of test instruments and procedures for exceptional students who chose to take the regular test rather than a special test as provided by Section 232.247, Florida Statutes.

Section 232.247, Florida Statutes. This exceptional student legislation provides an opportunity for five groups of exceptional students (educable mentally retarded, emotionally handicapped, trainable mentally retarded, deaf, and specific learning disabled) to be awarded a special diploma upon meeting standards developed for their exceptionalities. Thus, two types of diplomas are available for graduation of exceptional students.

Standard diploma. A standard diploma indicates the student has mastered the 11th grade minimum performance standards (State Student Assessment Test, Parts I and II) as well as all district requirements of his or her exceptional education program and has been certified as having mastered all relevant state minimum student performance standards.

Summary

The participation of handicapped students in minimum competency testing programs gives rise to a number of issues. Three of the most often cited are the following:

1. The nature and extent of accommodation afforded to exceptional students participating in MCT programs (Grise, 1980; Morrissey, 1980).
2. The inclusion of minimum competency test requirements within the individual educational plan (Danielson, 1980; Fenton, 1980; Olsen, 1980).
3. The difficulty that schools will have in assuring that pupils attain a given level of performance while providing for the special needs of the handicapped student (Linn, Madaus, & Pedulla, 1982; Ross & Weintraub, 1980).

This educational controversy is an ongoing phenomenon. Ewing and Smith (1981) regard the denial of diplomas to handicapped minimum competency failures as having stronger adverse effects than on nonhandicapped students. Furthermore, concern is also cited when considering the handicapped student's performances on minimum competency testing and its adverse effect on the long-term educational and economic prospects.

Even before these current issues were raised, Florida began a compulsory statewide assessment program. In 1976 (Accountability Act), the Florida Legislature required all students to master (SSAT-I) and apply (SSAT-II) specified minimum performance standards in reading,

writing, and mathematics in order to receive a standard State of Florida diploma (Grist, 1980). Although modifications in test format have been made to accommodate certain handicaps, handicapped students are tested and expected to achieve mastery on the same content as regular education students. This achievement of mastery for mildly handicapped students when compared across handicapping conditions and with nonhandicapped students on the 1984 Florida Student Assessment Test (Part II) is the issue addressed in this research.

CHAPTER II
REVIEW OF THE LITERATURE

Introduction

Since 1976, a considerable amount of space in educational journals has been devoted to the conceptualization and definition of minimum competency testing (MCT). MCT involves the administration of proficiency tests in order to certify that minimum competency or proficiency exists with regard to a set of knowledge or skills. The tests include basic knowledge and skills learned by most students at or below the eighth grade level, and do not attempt to cover the full range of topics included in the high school curriculum. Many of these programs are included in larger educational programs that attempt to make provision for diagnosis and remediation of achievement deficiencies before, in some cases, ultimately denying the student a regular high school diploma (Beard, 1979).

The enthusiasm for competency tests stems from a belief that the testing of essential skills and competencies will help raise academic standards and increase educational achievement (Haney & Madaus, 1978). In the late 1970s this sense of declining education also seemed to be supported by more objective evidence. Test scores had fallen over the past 15 years. Employers complained that high school

graduates were less prepared than before to take their places in the economy. Colleges and universities found that incoming freshmen were unready for college studies. And millions of parents were dissatisfied with the slight academic demands made on their school-age children (Lazarus, 1981).

States differ in their articulation of competency requirements. Florida, Colorado, and Utah exemplify the range of differences in this regard. Florida legislation imposes uniform statewide standards and testing of basic skills and functional literacy in a competency certification program encompassing assessment, grade promotion, and graduation. Colorado legislation makes the local district requirement of competency tests contingent upon certain provisions of benefit to the student. A state board ruling in Utah establishes a competency-based graduation requirement; localities formulate standards, measurements, and grades (Baratz, 1980).

If one assumes that minimum competency testing is a plausible means of bolstering educational standards, many questions arise regarding implementation (Kohlfeld, 1984). As early as 1977, discussions at four regional conferences on minimum competency testing, sponsored by the Education Commission of the States, the National Institute of Education, and the Carnegie Corporation of New York, focused on the following questions:

1. What competencies will you require?
2. How will you measure them?
3. When will you measure them?

4. How many minimums will be established?
5. How high will the minimums be set?
6. Will minimums be set for schools or for students?
7. What will be done with those who do not pass the competency tests? (Brickell, 1978)

These questions appeared to take some things for granted and overlook others. That is, they assumed that minimum competency testing was a plausible tool for bolstering educational achievement, but they ignored the fact that adequate means to implement such schemes may simply not be available. Haney and Madaus (1978) cited three such unresolved, basic problems in implementing extensive minimum competency testing programs as (a) the definition of competencies, (b) the specification of minimal competencies or standards, and (c) the testing of minimal competencies (validity and reliability).

It is the consideration of these three basic problems that will be discussed to supply a point of reference for the last two topics of litigation and the problems of handicapped students in mandated minimum competency testing programs. The organization of this literature review will be as follows:

1. Basic concepts
    a. The definition of competencies
    b. The specification of minimal competencies or standards
    c. The testing of minimal competencies (validity and reliability)
2. Litigation stemming from the minimum competency movement
    a. Appropriate use of competency tests is constitutional
    b. There must be adequate notice given to students

c. Competency tests may not carry forward the effects of past racial discrimination

d. A graduation test must reflect material taught

e. Section 504 does not prohibit requiring handicapped students to meet valid test requirements in order to receive a regular diploma

3. Minimum competency and handicapped students

a. Handicapped students' participation

b. Test modification and accommodations for handicapped students

c. Diploma or certification issues

4. Closing discussion

Basic Concepts

The Definition of Competencies

The symbolic function of the term "competencies" is substantial; however, its exact meaning remains unclear. Often it appeared to be used according to a dictionary meaning "property or means of subsistence sufficient to furnish the necessaries and conveniences of life" (Lexicon Webster Dictionary, 1981, p. 206); all students should have sufficient means to furnish the necessaries and conveniences of life by the time they leave high school. Elsewhere, in the minimum competency literature, there were references to "life skills," "essential skills," or "survival skills." Yet, any type of skills alone comprise only part of the aims of education. MacDonald-Ross (1973) observed,

> It is easy to find types of educational experiences which have nothing to do with skills--learning for learning's sake, for instance. The distinction between knowledge and skills is deeply embedded in our ordinary language for the excellent reason that it is meaningful and functionally necessary. To have a "skill" is simply to have the ability to execute useful tasks to publicly agreed standards of performance. (p. 29)

So, the language of minimum competency testing suggested concern, not with the broader goals of education, but more with the narrow issue of skill acquisition.

With respect to this position, other critics have taken issue with the "seductive nature" of the vocabulary used in minimum competency testing programs (Perkins, 1982).

> Undefined, perhaps undefinable terms are used, without consideration, in discussing minimum competency testing programs, and it is only when one thinks through the meaning and application of such terms that the apparent simplicity of MCT is stripped away revealing its true complexity. (Airasian et al., 1979, p. 21)

Airasian et al. also raised a concern about the particular selection of competencies by suggesting that schools may have attempted to identify and measure competencies that cannot be achieved by a majority of students. The authors asserted that, if this is so, it would be unfair for the school to expect mastery, and then to penalize students for not achieving it.

Often educators and other interested persons were surprised and at times disappointed at this lack of consensus regarding answers to questions concerning definable skills or competencies which adults require or cannot live without (Miller, 1981). Discussions often proceeded as if competencies or skills could be easily identified.

People function differently in society. Are we interested in the "essential skills" of the librarian or the lawyer, the bureaucrat or the baker, the con artist or the congressman? Would prisoners be considered as "functioning" in society, or pardoned politicians? Even if we could reach agreement on what constitutes maximum or minimum functioning in society, their determinants are simply not well understood.

The Specification of Minimum Competencies or Standards

For any MCT there was not a natural or obviously correct standard or minimum passing score that can be used to separate the "competent" from the "incompetent." Depending on the difficulty of the test, the old familiar 70% correct could be so lenient that almost no one would fail or so stringent that a passing score would be a very rare event. Setting minimal competency standards remains fundamentally a judgmental process (Linn, Madaus, & Pedulla, 1982).

The fact that standards depend on human judgment was not necessarily a fatal flaw; however, it was unclear who should make the judgments or how they should be made (Klein, 1984). The magnitude of the differences was such that thousands, not merely handfuls, of students in a medium-size state would pass the test and be labeled "competent" if the standard were set in one way, but would fail the test and be labeled "incompetent" if the standard were set in another way (Koffler, 1980).

Three researchers at the University of Kansas (Poggio, Glasnapp, & Ero, 1981) reported the results of a study comparing four different

standard-setting procedures. Each procedure was an apparently reasonable candidate for the task of systematically combining judgments to establish standards.

Three of the techniques were based on review and judgments concerning individual test items. These three procedures were sommonly known as the Angoff (1971), the Ebel (1972), and the Nedelsky (1954) procedures, named after the individuals who introduced them. These first three procedures each involved the review of individual test items by judges. Teachers using the Angoff procedure were asked to state the probability that a minimally competent student would answer each item correctly. Those using the Nedelsky procedure were asked to identify distractors on the multiple-choice test items that a minimally competent student should be able to recognize as incorrect. For the Ebel procedure, teachers rated each item for relevance and difficulty. They then indicated the percentage of items with each combination of relevance and difficulty rating that a student would answer correctly to be minimally competent. For each of these three methods, the judgments were combined to determine the minimum passing score.

The fourth technique, known as the contrasting-group method (Poggio et al., 1981), starts with one group whose members have previously been identified to be at least minimally competent and a second group with members who were judged not to be minimally competent. In the Kansas study, teacher judgments were used to identify the two groups; however, other judges or other information

could be used to form the two contrasting groups. Once the groups were formed, the passing score on the test was set so that it best identified the group in which the students were initially placed.

Representative groups of Kansas teachers at grades 2, 4, 6, 8, and 11 used one of the four methods. More than 900 teachers were involved in the process. At every grade level there were large discrepancies among the passing scores arrived at by the four different methods. The discrepancies are clearly illustrated in Figure 1, which shows the number of students who would be classified as failures according to the four different standard-setting methods. At each of the five grades, the Ebel method was the most stringent; that is, it resulted in the highest passing score and consequently yielded the largest number of failures. The Nedelsky method produced the most lenient standard in each case, resulting in the least number of failures of the four methods. The differences in the number passing among the four methods were very large and would mean the difference between passing and failing, being labeled "competent" or "incompetent" for thousands of students.

Despite these serious consequences attendant on the setting of the passing score, there was no apparent superior basis for judging one procedure over another. Poggio et al. (1981) further stated that "the use of a single method to set a performance standard is arbitrary and neither the existing literature nor present data would support the superiority of any one of the four methods investigated" (p. 8). This conclusion echoed that of other researchers who have studied

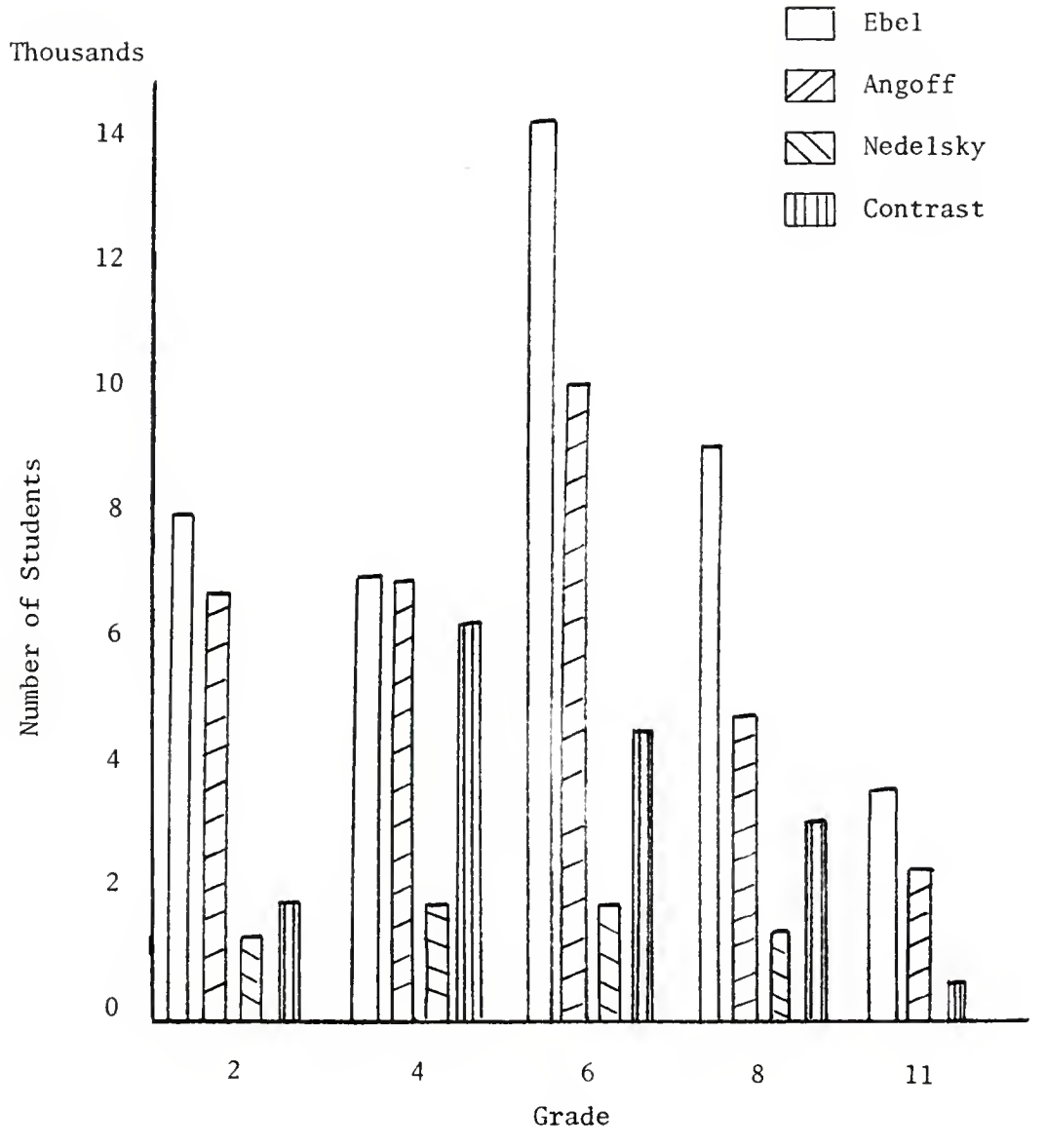

Figure 1. Failures with different standard-setting methods based on Poggio et al. (1981) reading tests.

the issue (Glass, 1978a, 1978b; Shepard, 1979, 1980). Glass (1978b) pointed out that competence is a continuous trait and that attempts to base a cut-off score or standard for all individuals on a concept of minimal competence will fail because "(1) it has virtually no foundation in psychology; (2) when its arbitrariness is granted but judges attempt nonetheless to specify minimal competence, they disagree wildly" (p. 251).

Jaeger, Cole, Irwin, and Pratto (1980), at the University of North Carolina, compared passing standards then in use in North Carolina, set by samples of teachers, school administrators and counselors, and registered voters. Each of the three groups used the same standard setting procedure, which included three rounds of rating individual test items. In each round of ratings the judges were asked to review each test item and respond to the following question: "Should every regular high school graduate in North Carolina be able to answer this item correctly?" (p. 43). In between the first and second ratings judges were given information about actual student performance on each item and knowledge of the recommendations made by other judges in their group. After the second round of rating, the raters were also informed about the percentage of students in the state that would pass if particular cut-off scores were used. Members of each group then gave a third and final set of ratings which were used to determine the minimum passing scores recommended by that group.

For the reading test, registered voters recommended a minimum passing score of 110, a level that would have failed 30% of the North

Carolina high school students who took the test. Teachers, on the other hand, recommended a minimum passing score of 95, which would have failed 9% of the students. The recommendation of the group of principals and counselors, the standard actually employed by the state, was in between those of the registered voters and the teachers. About 21% of the students would pass if the cut-off score were set by one group of judges but would fail if it were set by another group.

In mathematics the discrepancies were just as great, but all three groups recommended a standard that would have failed a much larger percentage of students, anywhere from 47% to 71% depending on the group providing the recommendation (all three groups recommended much more severe standards than are actually used by the state). Over half (56.7%) of the students taking the test passed using the standard set by the state and would have failed if the standard set by the most stringent group of judges had been applied.

With such high discrepancies in passing scores established by different methods (as demonstrated by Poggio et al. [1981] in Kansas) or by different groups of judges (as demonstrated by Jaeger et al. [1980] in North Carolina), it was difficult to see how any particular value can be defended. Any value seemed arbitrary. Maybe because of this arbitrariness it was not surprising that a minimum passing score often seems to be just picked out of the air. In Florida, for example, the minimum passing score on the Functional Literacy Examination (State Student Assessment Test, Part II, 1978) was set at the fairly arbitrary level of 70% for both the communications and

mathematics tests (Florida Statewide Assessment Resource Manual, 1979) although pretesting and the first "level" administration showed that this common passing score resulted in a much higher failure rate in mathematics than in communication. Florida's explanation for this outcome was that students were much weaker in math than in communications skills (Florida Flunks, Time, December 12, 1977). Another plausible and simple explanation by Glass (1978a) was that the discrepancy between math and reading pass rates was that the contractor who built the test wrote harder items in math than in reading.

At the Minimum Competency Testing Clarification Hearing in Washington, Robert Ebel, a measurement expert witness for the pro side, was asked about the standard-setting problem. He argued that basically standard setting is a matter of judgment, and could see no way of avoiding it, because, even in the highest court in the land, decisions are made on the basis of informed judgments (Thurston & House, 1982). Further questioning by James Popham, the leader of the pro team, elicited the opinion from Dr. Ebel that different procedures involve different assumptions and different judgments and hence give different results.

Criteria have been offered by proponents of MCTs to help decide which standard setting procedure should be applied. Popham argued simply that, if standards are set openly, with the involvement of all groups who are concerned, the standard would in fact be defensible. However, pupils have no appeal against an arbitrarily

set cut-off score; the decision makers who set the cut-off score became the highest court in the land. Arbitrariness does not necessarily mean that standards were set capriciously or mindlessly (Popham & Lindheim, 1981). However, when passing scores were set arbitrarily even by "good" or "well-intentioned" open procedures and then could not be overruled in individual cases, children could be hurt psychologically through labeling and/or materially through loss of a diploma or by being retained in grade (Citron, 1982; Linn et al., 1982; McCarthy, 1983).

The Testing of Minimal Competencies (Reliability and Validity)

The third and final consideration in basic concepts questioning the minimum competency testing movement had to do with establishing reliability and validity. Until the mid 1970s, accepted procedures for creating and interpreting tests centered primarily on I.Q. and achievement tests. Minimum competency tests required new application of these procedures to establish and insure reliability and validity (Madaus, 1985).

Ronald Hambleton and his colleagues (1978) described how psychometricians and statisticians have combined old and new theories to shape the use of minimum competency tests. For example, test developers have traditionally calculated the reliability of test items by comparing the performances of the highest- and lowest-scoring segments of a given test population. For minimum competency tests, however, Klein (1984) suggested that comparisons were made between two separate populations--one that was believed to have already

mastered test content and another that had not previously been exposed to the material.

Insuring the validity of minimum competency tests has become a matter of legal urgency as well as scholarly concern since the landmark Florida court case, Debra P. v. Turlington (5th Cir., 1981). Christine Citron (1982), a specialist in school law with the Education Commission of the States, has written "The Fifth Circuit ruled that the state must demonstrate that the material on the (minimum competency) test was actually taught in the state's classrooms in order to establish the requisite content validity" (pp. 10-11).

Several researchers have suggested ways for school districts to document the content validity of their minimum competency tests. James Popham and Elaine Lindheim (1981) have described two classes of evidence that districts can offer the courts: (a) instructional materials, such as text books, course syllabi, and teachers' lesson plans; and (b) descriptions of actual classroom transactions, which can range from elaborate electronic recordings to simple teacher or student reports.

Two more strategies for linking testing to instruction were proposed by Airasian and Madaus (1983). In the first, a detailed taxonomy of skills and knowledge in a given subject-matter area was created; then the same taxonomy was used to analyze the content of commercially available achievement tests. The test that best mirrors the competencies to be taught was selected. However, even this careful matching process does not guarantee that the actual classroom activities will not vary from the taxonomy in both content and emphasis.

The second strategy that Airasian and Madaus suggested was the use of experts to judge the degree of overlap between instruction and tests. For example, teachers could estimate students' opportunities to learn the content of given test items. To form such an estimate, a teacher might rely on curricular materials and/or personal instructional emphasis. The important thing to remember is that high school diplomas cannot be denied on the basis of tests that require students to know material that has not been taught. If challenged, a school must be able to prove that test items matched course objectives and classroom instruction.

McClung (1977) discussed this issue in terms of curriculum validity and instructional validity. The author asserted that curriculum validity meant that minimum competency tests should measure topics actually covered in the school curriculum. This issue may be especially pertinent to life-skills tests because some of those skills may not be taught in school. In addition, McClung suggested that minimum competency tests have to be instructionally valid, that is, topics in the curriculum must actually have been taught to the students tested. In practice, of course, how to determine whether or not a competency test is instructionally valid might prove to be a problem. For example, assuming that a student has been instructed in reading, would a test that required reading in a format not directly included in the school curriculum--say in classified advertisements (as in a life-skills competency test)--be instructionally valid?

Apparently other forms of measurement validity must be considered. Haney and Madaus (1978) stated, "If a minimum competency testing scheme is aimed at measuring not just academic skills, but life skills, the predictive validity of the test in terms of life skills will also be a relevant issue" (p. 470). The authors illustrated this validity issue with a minimum competency test most people have taken--the written and performance portions of the driver's license examination. Passing these tests certifies that the applicant mastered the skills and knowledge regarded as necessary for the safe operation of a motor vehicle. Performance on the test was not necessarily related to future driving performance.

Litigation Stemming From the Minimum Competency Movement

Courts traditionally have been reluctant to interfere with the broad discretion vested in school officials to establish academic standards and evaluate student performance (Greenhill v. Bailey, 1975; Mahavongsanan v. Hall, 1976). In 1978, the United States Supreme Court distinguished an academic determination from a disciplinary action, noting that the former "judgment is by its nature more subjective and evaluative than the typical factual questions presented in the average decision" (Board of Curators of the University of Missouri v. Horowitz, 1978). The Court emphasized that academic performance was properly assessed by professional educators who have expertise in this area.

However, McCarthy (1983) noted that the judiciary has not followed its customary hands-off posture regarding student academic

evaluation if pupils have not been informed of the assessment criteria or provided sufficient notice of unsatisfactory performance prior to the imposition of sanctions. McCarthy also noted that courts have intervened if students have been subjected to arbitrary or discriminatory assessment practices.

Citron (1982) concurred with this change in posture by the judiciary by noting the significant trend toward use of competency testing by schools to help in placement of children or to determine qualifications for graduation. The few cases that have generated court decisions continue to be litigated in the 1980s. "Some are on appeal to higher courts, while others are back in trial court for a second round following an appellate court decision" (p. 10). Despite the formative stage of this area of law the author cited at least five legal principles that have emerged.

1. Appropriate use of competency tests is constitutional.
2. There must be adequate notice given to students.
3. Competency tests may not carry forward the effects of past racial discrimination.
4. A graduation test must reflect material taught.
5. Section 504 does not prohibit requiring handicapped students to meet valid test requirements in order to receive a regular diploma.

Appropriate Use of Competency Tests is Constitutional

In Florida in 1979, a federal judge ruled in favor of a small unrepresented group of plaintiffs and their attendant social science

experts who challenged a newly enacted minimum competence law that most of their fellow Floridians supported. However, when Debra P. v. Turlington was appealed, the U.S. Court of Appeals for the Fifth Circuit found that the state's interest in establishing a functional literacy examination was legitimate, so long as the implementation procedure and the test instrument were fair. The court held that the state could require passage of a fair test as a diploma requirement (5th Cir., 1981).

There Must Be Adequate Notice Given to Students

Adequate notice was perhaps the most well-established, as well as the most straight-forward principle to emerge from the judicial decisions thus far (Citron, 1982). Fair warning and opportunity to prepare for a competency test must have been given to students. In the Debra P. v. Turlington appeal, the Fifth Circuit affirmed the district court's ruling on this point (i.e., lack of adequate notice). The court reasoned that the test had been hastily constructed and administered (McCarthy, 1983). Students had only 13 months' notice that they would have to pass the State Student Assessment Test in order to get a high school diploma. This was not enough time to permit students to prepare for such a test, in the opinion of the Fifth Circuit. Other courts have also followed the lead set by Debra P. on this point. In Board of Education v. Ambach (S. Ct. Albany County, 1981) and Anderson v. Banks (S. D. Ga., 1981), the court also relied on Debra P. for the notice requirement but distinguished the facts of inadequate notice in Debra P. and held

sufficient the "24 months which passed between the notice and the implementation of the diploma sanction. Remedial courses were provided during the period" (520 F. Supp. at 506).

Competency Tests May Not Carry Forward the Effects of Past Racial Discrimination

The court ruled that the waiting period was required to remove the past history of racial discrimination. Testing must not have a racially discriminatory impact unless the defendants can show that the disproportionate failure rate was due to some factor other than "educational deprivation" stemming from past wrongful policies (Citron, 1982). In Debra P. the court noted that 20% of the black students compared to less than 2% of the white students failed the 1979 tests; the court reasoned that the disproportionate failure of the black students could be attributed to the inferior education opportunities provided for minority pupils in the state prior to 1971 (McCarthy, 1983). While finding no present intentional discrimination, the court concluded that the state did not refute that the test's disparate impact on black students was the result of past intentional segregation. Thus, the immediate use of the diploma sanction was found to be a violation of minority students' rights under the equal protection clause, Title VI of the Civil Rights Act of 1964, and the Equal Education Opportunities Act of 1974 (Learner, 1981).

A Graduation Test Must Reflect Material Taught

The appeals court in Debra P. added another condition that must be satisfied before the functional literacy test can be used as a

prerequisite to high school graduation in Florida. The court stipulated that the state must prove that the test has curricular validity in that it assesses what actually has been taught in the public schools (Pullin, 1981). This ruling was based on principles of constitutional fairness derived from both the due process and equal protection clauses of the Constitution (Citron, 1982). This burden of showing curricular content validity existed irrespective of any claims of racial discrimination. The court emphasized that if the state can prove that it has devised a fair test of what has been covered in the instructional program, the award of high school diplomas can be conditioned on passage of the examination after a proper phase-in period is provided (Popham & Lindheim, 1981).

In Anderson v. Banks (1981), a Georgia federal district court applied the Fifth Circuit Appellate Court's (Debra P. v. Turlington) curricular validity standard in assessing a Georgia school district's use of the California Achievement Test (CAT) as a prerequisite to receipt of a high school diploma. The court concluded that school authorities carried the burden of proof in establishing that the "reliable and well-established test instrument" actually covered what had been taught in the schools (McCarthy, 1983).

Section 504 Does Not Prohibit Requiring Handicapped Students to Meet Valid Test Requirements in Order to Receive a Regular Diploma

The Anderson court also examined the application of Section 504 of the Rehabilitation Act of 1973, and ruled that schools are not required to lower their academic standards in order to accommodate

properly classified handicapped students who cannot meet those standards because of their handicap (McCarthy, 1983). Anderson's holding concerning the Section 504 claim was consistent with earlier decisions in which no Section 504 violation occurred because students who could not pass the test were therefore not "otherwise qualified." Persons must have been "otherwise qualified" in order to make a Section 504 claim of discrimination, on the basis of handicap, under Southeastern Community College v. Davis (1979). Although special students do not have an entitlement to a "regular" diploma under Section 504, those who completed their agreed-upon individualized education programs are entitled to some form of certification (Citron, 1982). Thus, Section 504 has been interpreted as protecting handicapped children from discrimination in the "administration" of an MCT program, or any other testing program for that matter. But it does not assure a handicapped child that a diploma would be awarded if academic standards have not been satisfied.

Conclusion

Whether MCT programs will have primarily a positive or negative impact on students and public education remains the subject of considerable debate. But, regardless of the merits of such programs, most schools and students seem destined to be affected by them (Citron, 1982; Learner, 1981; McCarthy, 1983). Given the general disenchantment with public education and demands for results in return for tax dollars, the establishment of proficiency standards for students is viewed by many as a means of focusing educational efforts on producing

measurable outcomes (Baratz, 1980; Haney & Madaus, 1978; Lazarus, 1981). Yet, until the numerous unresolved issues are adequately addressed, MCT programs are likely to continue to generate substantial controversy and legal activity.

Minimum Competency and Handicapped Students

The implementation of minimum competency testing (MCT) in a majority of states has raised questions about the participation of handicapped children. Among the issues involved are the nature and extent of accommodations afforded to exceptional students (McKinney, 1983; Morrissey, 1980), the inclusion of MCT requirements within individual educational plans (Danielson, 1980; Fenton, 1980; Olsen, 1980), and more generally, the difficulty that schools will have in assuring that pupils attain a given level of performance while also providing for the special needs of the handicapped student (Ross & Weintraub, 1980; Serow & O'Brien, 1983).

The Education for All Handicapped Children Act of 1975 (Public Law 94-142) and Section 504 of the Vocational Rehabilitation Act of 1973 (Public Law 93-112) encourage handicapped students to participate, as fully as possible, in all facets of educational programs, including assessment (Grise, 1980; Ross & Weintraub, 1980). These acts also imply that handicapped students be protected when assessment takes place, that is, the measurement should be influenced only by the skill being measured, not by the handicapping condition (McCarthy, 1983).

Thus far, however, only limited direct attention has been paid to the special problems of handicapped students in mandated minimum

competency testing programs (Grise, 1980; McClung & Pullin, 1978; Serow & O'Brien, 1983). Federal requirements concerning the education of the handicapped (PL 94-142, Section 504 of PL 93-112, and the regulations of the U.S. Department of Education implementing those laws do not address the issue of mandated minimum competency testing. An examination of the federal standards, however, indicates several circumstances in which the provisions of a state or locally mandated minimum competency testing program conflict with federal mandate concerning the education of the handicapped student (Pullin, 1980).

The remainder of this section, addressing MCT and handicapped students focuses on the educational and legal issues facing educators when high school students are required to pass a minimum competency test to receive a high school diploma. The major issues addressed are (a) to what extent should handicapped students participate in, or be exempt from, the testing program; (b) should tests be adapted for individual handicapped students; (c) should differential diplomas be awarded to handicapped students on the basis of test performance.

Handicapped Students' Participation

States that link MCT mandates to high school graduation did not have uniform procedures for dealing with handicapped pupils, that is, students who are receiving special education because of physical, mental, or severe emotional disabilities (Beckham, 1980). In some states, certain categories of mentally handicapped children were excluded from the MCT requirement but were awarded regular diplomas based on successful completion of individualized educational programs

(IEPs). In still other states, all pupils were required to pass the MCT to qualify for a high school diploma (Learner, 1981).

For example, since 1977, North Carolina and Florida have required exit competencies for graduation. However, the exceptional child in North Carolina (except for the trainable mentally handicapped or severely mentally handicapped) is required to take the test, whereas it is optional for the exceptional child in Florida. Parents (or students 18 years of age or older) may request that their child not take the test in North Carolina and may request that their child be allowed to take the test in Florida. North Carolina's and Florida's modifications were similar; however, their terminology differed (Amos, 1980).

Another approach to modification was proposed by Olsen (1980). The author advocated the integration of minimum competency testing and the IEP process:

> Rather than consider minimum competency testing and the IEP process as separate and distinct components of the educational system, there is a need for joint planning among the testing and evaluation people, special education administrators, teachers, and advocacy groups to define those areas in which collaborative effort can take place. (p. 180)

Olsen supported his position by citing Vermont's multi-year plan as described by Hull, Garvin, and Withey (1979):

> It assures a child's parents that graduation plans will be worked out far enough in advance so that an alternate set of requirements can be developed. . . . Most important, it insures that education will remain individualized even in view of the fact that certain minimum standards are imposed on all students. (p. 43)

Attorney M. McClung (1977) further related that schools would be well advised to involve handicapped students in a minimum competency

program on a case by case basis. The individualized education program (IEP) required for each child under PL 94-142 could be used as the basis for recommending a student degree of participation in the program. Such a procedure was employed in Vermont (as mentioned above), California, Missouri, Massachusetts, and perhaps other states. Determining competency requirements through the IEP process insured that handicapped students reap the benefits of a competency program but be protected against the pitfalls of such a program by the persons who develop the IEPs.

According to McClung, excluding handicapped students from participation in the testing program violated the equal protection clause of the U.S. Constitution. Furthermore, Section 504 (PL 93-112) prohibited the exclusion of handicapped persons from an educational program or opportunity solely on the basis of a handicap.

In conclusion, Pullin (1980) acknowledged that diplomas and mandated tests were part of the regular education program and that there should be no blanket prohibition of participation of the handicapped student in the mandated program. The author further stated that sound educational practice does not necessarily require the full participation of all handicapped students in minimum competency testing programs.

> The federal laws requiring full participation in mandated programs are to be applied to each individual student, with exemptions or modifications in the program permissible only to the maximum extent appropriate. (p. 111)

The author also related the possibility of some handicapping conditions being the basis for exclusion (e.g., severe mental retardation) but

reiterated the need for meaningful evaluation assessing the student's capabilities, the nature of the skills and knowledge covered on the test, and the extent to which the student can reasonably be expected to master the skills and knowledge on the minimum competency test.

Test Modifications and Accommodations for Handicapped Students

Once it has been determined that a particular handicapped student was capable of mastering the skills and knowledge on the minimum competency test, educators must decide whether any special accommodations must be made in order for students to take the test. Decisions here confront the disparate goals of the current minimum competency and special education movements. Those who espoused minimum competency testing sought to impose at least a minimum level of homogeneity on the student population. Special educators focused on individual differences (Pullin, 1980).

Handicapped pupils could not be denied the opportunity to take a competency examination to qualify for a high school diploma, but the scope of the school district's responsibility to make accommodations in MCT programs for disabled students remained unclear (McCarthy, 1983). If the only accommodation for the handicapped student that can be expected, in most testing programs was a variation of format for test administration (Citron, 1982), the modified tests must be valid measures of the minimum competencies being assessed (American Psychological Association, 1974). Test givers were required by professional standards to establish test validity before using a test, but validation efforts did not usually pay particular attention to

whether a test format for the handicapped student required even more extensive proof of validity by test givers with particular proof that the accommodations made did not impair the validity or reliability of the test.

In contrast to some other states, North Carolina required the participation of the majority of its handicapped pupils. For example, while Florida exempted those students classified as mentally retarded, emotionally handicapped, learning disabled, and hearing impaired (Grise, 1980), only those students classified as trainable and severely retarded were exempted from the North Carolina MCT program (Serow & O'Brien, 1983). In North Carolina handicapped children whose parents requested an exemption received only the certificate of attendance upon graduation. Otherwise, test adaptations for the handicapped included provision for audiocassettes, large print, extended test periods, and other physical modifications, not adjustments in performance standards. On the whole, these adaptations appeared to be equivalent to those used in other states (Amos, 1980).

Florida began a compulsory statewide assessment program with its 1976 Educational Accountability Act. All students were required to master specified minimum performance standards in reading, writing, and mathematics. No provisions were made for handicapped students until the law was amended in 1977. At that point, exceptional students classified as educable mentally retarded, trainable mentally retarded, emotionally handicapped, specific learning disabled, or hearing impaired were exempted from the testing requirement for

graduation or promotion purposes. These students could, however, participate in the testing program if they chose to receive a regular diploma (Grise, 1980).

For exceptional students who did participate, either by choice or mandate, special testing adaptations in Florida were among the most extensive of any of the states (see Appendix B). Under one special test adaptation (test modification), Florida offered five types of modifications (flexible scheduling, flexible settings, recording of answers, mechanical aids, and revised formats).

Grise concluded his discussion of test modifications with a question of whether a MCT program should accommodate this sort of variation; "the answer must be determined through clarification of state legislation" (p. 189). The author cited both Virginia legislation and New York legislation as having made allowances in their competency testing programs to permit certain handicapped students to be administered the test entirely through auditory means.

Diploma or Certification Issues

Questions surrounding diplomas or certificates of graduation for handicapped students were closely related to the questions of test modifications, participation, and/or exemption discussed earlier. If it was decided that the standards were not appropriate for a student, or if the student was procedurally accommodated, should the student receive the same diploma as his or her nonhandicapped peers? Should a certificate of competency be used instead (Fox & Weaver, 1981)?

These questions were elaborated by Amos (1980) in discussing the learning disabled student and MCT programs. The author explained

that if MCT was a requirement for graduation, there must be alternatives to the diploma. "In some states, there is a diploma for completing all requirements including passage of the MCT or there is a certificate of attendance for completing all course requirements without passing the MCT" (p. 195). Fox and Weaver (1981) clarified this position of diploma or certificate by adding that the intention of such a procedure was for certificates of competency (or attendance) to reward effort and honestly reflect the capabilities and progress of each student. "The use of both diplomas and certificates is expected to help strengthen the measurement process and restore authenticity to the diploma" (p. 431).

Florida was again cited because of the variety of options offered in its statewide MCT programs. Handicapped students in Florida who meet the regular minimum student performance standards were awarded the same standard diploma as all graduating nonhandicapped students (Grise, 1980). Handicapped students who master special standards received a special diploma (Ross & Weintraub, 1980). This diploma was nearly identical in appearance and terminology to the regular diploma. Grise also cited a third option in Florida; the certificate of completion which was given upon program completion with failure to demonstrate mastery of the minimum standards.

Discussions of these options surround the question of the value or stigma of being awarded anything but a standard diploma. The impact of the special diploma was previewed by the Florida Task Force on Education Assessment Programs (Westling, 1978). The Task Force

reported no stigma whatsoever attached to the special diploma. Employers, community college programs, and the military service had no reservations about students with special diplomas. Thus, Florida students with either a standard or a special diploma were regarded, in the state, as bona fide graduates, regardless of placement as regular or exceptional (special) students.

Florida's policy of offering the various diplomas and certificates is consistent with current legal views. As previously discussed, Citron (1982) stated that "although special students do not have an entitlement to a regular diploma under Section 504, those who complete their agreed-upon individualized education programs are entitled to some form of certification" (p. 11).

Closing Discussion

For the past nine years the advantages and disadvantages of minimum competency requirements for students have been a source of continual debate. Competency tests have been criticized for their alleged bias against racial and ethnic minorities and handicapped populations (Anrig, 1985). In addition, the subjective identification of standards or cut-off scores has been paired with these criticisms (Madaus, 1981). Critics have also claimed that accurate assessment of students' skill mastery cannot be provided, given the current state of the art in testing technology (Glass, 1978a; Madaus, 1985). Thus grade promotion or the award of a diploma should not depend on the results of a single test (Kohlfeld, 1984; Palardy, 1985) but should reflect criteria such as daily class performance, the IEP

process, and teacher recommendations (Amos, 1980; Olsen, 1980; Pullin, 1980).

Another common criticism of MCT was that the focus on minimum requirements may be destructive of the principle of intellectual and personal meritocracy in education (McClung, 1977). It has been argued that MCT will result in a narrowing of the curriculum because teachers and students will tend to emphasize preparation for the test and slight areas such as abstract reasoning, creative expression, and the arts. Moreover, concerns have been voiced that the term "competence" is misleading. There were inadequate data to substantiate which competencies were necessary to insure students' future success as citizens and workers (Franzosa, 1984; Hasazi et al., 1985; Perkins, 1982; Pullin, 1980).

These assertions were countered by advocates of MCT arguing that curriculum may need to be more clearly focused to insure that students attain minimum proficiency in basic skills (Popham & Lindheim, 1981). Some recent positive indications were reported by Popham, Cruse, Rankin, Sandler, and Williams (1985). The authors noted increased mastery achievement among handicapped and nonhandicapped students in one city, Detroit, and three states, Maryland, Texas, and South Carolina. Other advocates also claimed that proficiency testing provides a vehicle for early identification of children's deficiencies so that appropriate remediation can be provided (Anrig, 1985; Spady, 1978).

Since its establishment in 1977, only limited attention has been given directly to the problems of handicapped students in mandated minimum competency testing programs (McClung & Pullin, 1978). Mandated minimum competency testing programs used as part of the requirement for receipt of a regular high school diploma presented substantial legal and policy issues for special educators. The inherent conflict between the homogeneity sought by the test givers and the individualization sought by an increasing number of special educators indicated but one of the numerous conflicts about the role of such programs in the education of the handicapped student (Pullin, 1980).

It was the intention in this literature review to investigate a number of issues with reference to mandated minimum competency programs. Although this endeavor does not include all the issues or literature addressing this topic, it does attempt to present an indepth investigation into those unresolved questions that continue to plague the minimum competency testing movement. A special focus was given to the role of MCT in the education of handicapped students. It is the dearth of information concerning the actual performance of handicapped students that supplies the basic justification for this study. This study provides a comprehensive comparison of the performances of equal samples of handicapped (emotionally handicapped, specific learning disabled, and educable mentally retarded) students and nonhandicapped students on one state's (Florida's) minimum

competency testing requirement for high school graduation with a standard diploma as the certificate of achievement.

CHAPTER III
METHOD

The "back to basics" movement, at the foundation of state assessment programs, is no accident and no "bandwagon," but a well documented academic trend. The simple fact that 37 states had passed some form of minimum competency testing for students prior to 1983 adds to the current concern and challenge facing special education (Pipho, 1983). Since the use of Florida's State Student Assessment Test is current policy, comparative studies of performance would appear to be of value for both testing as well as current and future educational programs (Grise, 1980). Furthermore, an investigation into relationships between skills and standards mastered by students would give indications of program outcomes and the validity of this instrument to consistently measure those outcomes. Finally, special educators could use these data to make decisions as to the viability of handicapped students achieving a standard State of Florida diploma. That is, if special education students are ultimately going to have to master the skills assessed on the State Student Assessment Test, then special educators should monitor the achievement of handicapped students closely.

The method described in this study was used to develop a comprehensive comparison of the performances of mildly handicapped

and nonhandicapped 10th grade students who elected to be included in Florida's Statewide Student Assessment Test, Part II (SSAT-II). For organization, this chapter will be divided into six sections as follows: (a) Florida's Statewide Assessment Program, (b) Description of Design, (c) Statements and Specific Questions Addressed, (d) Data Analysis, (e) Subjects, and (f) Concluding Statements.

Florida's Statewide Assessment Program

There is a strong movement throughout the nation and in the State of Florida for educational improvement. Florida has taken decisive steps to counteract the achievement decline through establishment of a system of educational accountability. Educational goals have been defined, minimum student performance standards have been established, student achievement is being measured, and programs are being evaluated. Florida's stated goal is to insure that every child acquires essential skills through a quality educational program that is both efficient and economical.

The statewide assessment program was created in the early 1970s to provide information on student achievement of basic skills. This assessment was established in order to assist in fulfilling Florida's goal of insuring that every child acquires essential skills through a quality educational program. Since 1977, this program has been the basis for decision-makers in determining broad areas of educational needs. The following description of the Florida state student assessment program is referenced in the Florida Statewide

Assessment Resource Manual (1979) and in the State, District, and Regional Report of Statewide Results (1984).

Background

The Florida Legislature expanded the role of the Department of Education through the Educational Accountability Act of 1976. Responsibilities of the department were enlarged to include the development and measurement of minimum student performance standards for certain minimum competencies in the basic skills to practical, every day problems (SSAT-II). The second test was originally called the "functional literacy test." Functional literacy was defined as "the satisfactory application of basic skills in reading, writing, and mathematics to problems and tasks of a practical nature as encountered in everyday life" (Florida Statewide Assessment, 1979, p. 6). The 1976 legislation mandated that high school students pass the functional literacy test as part of their graduation requirements.

The Student Assessment Section of the Division of Public Schools is responsible for developing tests designed to measure the achievement of the minimum student performance standards and applications of these performance standards to everyday problems. The State Assessment Test, Part I (SSAT-I) measures minimum standards and skills at the beginning of grades 3, 5, 8, and 11. The State Student Assessment Test, Part II (SSAT-II) includes the 11th grade minimum student performance standards and measures the application of the SSAT-I skills to practical problems. The fall testing of the 11th grade standards and skills has been moved to the spring of the

10th grade to provide enough time for students to master the standards on the SSAT-I and to pass the SSAT-II prior to graduation.

Standards and Skills

Each minimum student performance standard is defined by one or more related skills. Each skill, in turn, is measured by several test questions, usually four or five. The test questions are constructed to reveal whether or not students have mastered the minimum standards and skills. Figure 2 shows the relationship of questions to skills and skills to a standard (State, District, and Regional Report, 1984, p. 2).

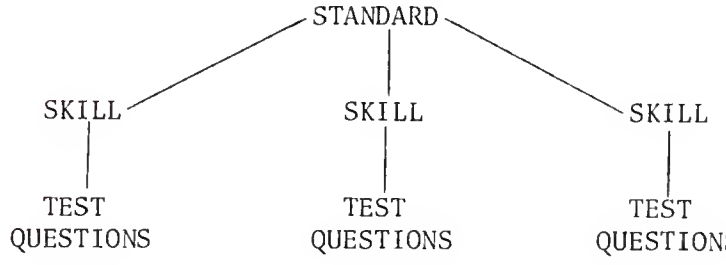

Figure 2. Relationship of questions to skills and skills to a standard.

Table 1 presents the number of standards, skills, and questions for communication skills and mathematics on the SSAT, Parts I and II for March 1984, 10th grade assessment. Communication skills and mathematics are considered two different standards on the SSAT-II. The number of skills assessed and the total number of questions are shown on the table (State, District, and Regional Report, 1984, p. 3).

Table 1

Number of Standards, Skills, and Questions Tested by Grade and Subtest for the March 1984 Statewide Assessment Tests

SSAT-I - March 1984		Standards	Skills	Questions
Grade 10	Communication Skills	9	15	80
	Mathematics Skills	8	16	80
		17	31	160

SSAT-II - March 1984		Skills	Total Questions
Grade 10	Communication Skills	15	75
	Mathematics Skills	15	75
		30	150

Mastery of Standards

Florida students are expected to show mastery of all minimum student performance standards. However, it would be unreasonable to expect students to correctly answer every test question. For this reason, it was necessary for state leaders to determine rules for judging attainment of the standard. The following is a list of the numbers of questions required to attain mastery (passing criterion) on a measured standard.

The Minimum Number of Questions Required to be Answered Correctly	When the Number of Questions to Measure a Standard is
1	2
2	3
3	4
4	5
5	6
5	7
6	8
7	9
7	10
8	11
9	12
10	13
10	14
11	15
12	16
12	17
13	18
14	19
14	20
15	21
16	22
17	23
17	24
18	25

To pass the State Student Assessment Test, Part II, a student must successfully complete both the communication skills standard and the mathematics standard by correctly answering, on any one administration of the test, the following number of required items per standard (Florida Statewide Assessment Resource Manual, 1979, pp. 14-15).

The Minimum Number of Questions Required To Be Answered Correctly Shall Be	When the Number of Questions To Measure a Standard Is
39	55
40	56
40	57
41	58
42	59
42	60
43	61
44	62
45	63
45	64
46	65
47	66
47	67
48	68
49	69
49	70
50	71
51	72
52	73
52	74
53	75

This passing criterion was changed in 1982 so that a student's raw score was converted to an equated scale score (700). This type of equated score was an attempt to equate any changes in the difficulty level of the new test compared to the old test. Students who take different test forms from year to year are required to perform at the same level of achievement to pass the test.

Revised Cut-Off Score for SSAT-II

In March of 1984, Florida 10th grade students took a version of the State Student Assessment Test, Part II (SSAT-II) that measured the 1985-86 skills. There were two new mathematics skills and six new communication skills, with two previous communication skills deleted. Because of this addition of new skills to the test, a new cut-off score was needed. The State Board of Education took action on this

issue on February 17, 1984, and the final passing scores were adopted. As of the March, 1984, SSAT-II administration, to pass the test students needed to answer correctly 47 out of 75 items in mathematics and 56 out of 75 items in communication skills.

Description of Design

This study was an ex post facto description and comparison of the performance of mildly handicapped and nonhandicapped students on their initial effort to pass the State Student Assessment Test, Part II (SSAT-II). This administration occurred in the spring (March, 1984) of the students' sophomore (10th) year.

An analysis of the SSAT-II was completed; numbers and kinds of skills (e.g., defining words, following directions) were reported. The number and percentages of students who master each skill in the test were tabulated. This type of reporting provided a measure of difficulty by visual comparisons of the scores of mildly handicapped students with their nonhandicapped peers. Additionally, mean test scores of students on individual skills were also tabulated. These data provided a basis for comparing the performance of students with specific handicapping conditions among categories (specific learning disabilities, emotionally handicapped, and educable mentally retarded) and between categories and their nonhandicapped peers.

The outcomes analyzed in this research were as follows:

1. The performance of students with individual handicapping conditions on the two standards was compared among handicapping conditions and with the performance of their nonhandicapped peers.

2. Comparisons of performance by rank ordering the four groups under investigation (SLD, EH, EMH, and nonhandicapped) skill by skill according to achievement of mastery.

3. A skill by skill analysis was made for three areas of mildly handicapping conditions: specific learning disabilities (SLD), emotionally handicapped (EH), educable mentally handicapped (EMH), and for their nonhandicapped peers. Measures of variability were tabulated.

4. A skill by skill comparison was made between each individual handicapping condition and nonhandicapped peers.

5. Comparisons of percentages of mastery achievement among the categories of handicaps.

Statements and Specific Questions Addressed

The emphasis of this study was further clarified by asking a number of specific questions concerning the five areas of investigation.

1. The performance by individual handicapping conditions (students) on the two standards of the SSAT-II was compared among handicapping conditions and with the performance of their nonhandicapped peers.

   a. What were the differences between students classified SLD and nonhandicapped students indicated by the mastery of specific standards (communication or mathematics) measured by the (March, 1984) SSAT-II? (SLD-NH)

   b. What were the differences between students classified EH and nonhandicapped students indicated by the number

of students achieving mastery on specific standards (communication or mathematics) measured by the (March, 1984) SSAT-II? (EH-NH)

c. What were the differences between students classified EMH and nonhandicapped students as indicated by the number of students achieving mastery on specific standards (communication and mathematics) measured by the (March, 1984) SSAT-II? (EMH-NH)

d. What were the differences between students classified SLD and students classified EH as indicated by the number of students achieving mastery on specific standards (communication or mathematics) measured by the (March, 1984) SSAT-II? (SLD-EH)

e. What were the differences between students classified SLD and students classified EMH as indicated by the number of students achieving mastery on specific standards (communication or mathematics) measured by the (March, 1984) SSAT-II? (SLD-EMH)

f. What were the differences between students classified EMH and students classified EH as indicated by the number of students achieving mastery on specific standards (communication or mathematics) measured by the (March, 1984) SSAT-II? (EMH-EH)

g. What were the differences between students classified as EH and students classified as SLD as indicated by the numbers of students achieving mastery on specific

standards (communication or mathematics) measured by the (March, 1984) SSAT-II? (EH-SLD)

2. Comparisons were made by rank ordering the performance of the four groups under investigation on individual skills according to percentages of mastery achievement.

   a. Which group of students (nonhandicapped, SLD, EH, or EMH) achieved the highest, second highest, third highest, and fourth highest percentage of mastery on individual communication skills, as measured by the (March, 1984) SSAT-II?

   b. Which group of students (nonhandicapped, SLD, EH, or EMH) achieved the highest, second highest, third highest, fourth highest percentage of mastery on individual mathematics skills, as measured by the (March, 1984) SSAT-II?

3. A skill by skill analysis was made for the three groups of mildly handicapped students and one group of nonhandicapped students.

   a. What was the variability (range) in achievement on individual communication skills, as measured by the (March, 1984) SSAT-II, by nonhandicapped students?

   b. What was the variability in achievement on individual communication skills, as measured by the (March, 1984) SSAT-II, by students classified as SLD?

   c. What was the variability in achievement on individual communication skills, as measured by the (March, 1984) SSAT-II, by students classified as EH?

d. What was the variability in achievement on individual communication skills, as measured by the (March, 1984) SSAT-II, by students classified as EMH?

e. What was the variability in achievement on individual mathematics skills, as measured by the (March, 1984) SSAT-II, by nonhandicapped students?

f. What was the variability in achievement on individual mathematics skills, as measured by the (March, 1984) SSAT-II, by students classified as SLD?

g. What was the variability in achievement on individual mathematics skills, as measured by the (March, 1984) SSAT-II, by students classified as EH?

h. What was the variability in achievement on individual mathematics skills, as measured by the (March, 1984) SSAT-II, by students classified as EMH?

4. Each group of students with a specific handicapping condition (category) was compared, skill by skill, with their nonhandicapped peers in order to judge significant interaction between test outcomes and individual samples.

a. Were there significant differences in achievement on skills between students classified SLD and nonhandicapped students as measured by the (March, 1984) SSAT-II? (SLD-NH)

b. Were there significant differences in achievement on skills between students classified EH and nonhandicapped

students as measured by the (March, 1984) SSAT-II? (EH-NH)

c. Were there significant differences in achievement on skills between students classified EMH and nonhandicapped students as measured by the (March, 1984) SSAT-II? (EMH-NH)

5. Comparisons of achievement among the categories of handicapped students were made in order to document differences in performance among classifications of handicapped students.

a. Were there significant differences in achievement between students classified SLD and students classified EH as measured by the (March, 1984) SSAT-II? (SLD-EH)

b. Were there significant differences in achievement between students classified SLD and students classified EMH as measured by the (March, 1984) SSAT-II? (SLD-EMH)

c. Were there significant differences in achievement between students classified EH and students classified EMH as measured by the (March, 1984) SSAT-II? (EH-EMH)

As previously stated, the purposes of the statewide assessment program are to collect and report information about student achievement, on selected basic and practical skills, in order to make decisions on educational policies and practices. Furthermore, the information from the assessment program is designed to make a contribution to the success of students (Florida Statewide Assessment Resource Manual, 1979). However, little, if any, data are reported making comparisons and

analysis of one particular population with another. This study was designed, through the questions listed above, to add necessary comparison data, thus aiding in the program's goal of improvement and better decision making.

Data Analysis

The data for this study were obtained through the Florida Department of Education--Division of Public Schools, Bureau of Program Support Services, Student Assessment Section. The availability of these data was assured by Ms. Diane Withers-Julian via a telephone conversation in March, 1985. The State Student Assessment Program staff records the scores of the students on the Florida Statewide Student Assessment Tests (SSAT-I and SSAT-II) individually as well as in reported percentages of mastery on each skill and standard. These data were analyzed by reporting both the percentages of mastery and raw scores achieved by random samples (n=300) of four groups of students on skills and standards included on the SSAT-II.

A second comparison was made among the four groups of students using the chi-square test of association. This nonparametric analysis strategy was used to determine the association between category (or sample) and response (passed, failed, not tested). This preliminary procedure indicated the need for a cut-off criterion being set for the differences among groups. Due to the large number of students included in the samples (n=300 each) and the large differences among the performances of certain samples, a difference of more than 10 percentage points on skill achievement was established to indicate significance without further statistical analysis.

Under this set criterion, a second chi-square procedure was employed to establish association between the samples of EH and SLD students and skill achievement. Nonhandicapped students and those classified as EMR were not included in this procedure due to the large differences in achievement between these two groups when compared to any other group.

Subjects

The subjects in this investigation were those nonhandicapped and mildly handicapped (high prevalence) 10th grade students, in the State of Florida, who chose to pursue a standard diploma as the certificate of graduation from high school. This choice required that these students master the Florida Minimum Performance Standards and pass the State Student Assessment Test, Part II (SSAT-II).

These subjects did not include those mildly handicapped students pursuing a special high school diploma, as specified in Section 232,247, Florida Statutes, or a certificate of attendance. However, these subjects did include those students who chose to take the regular test (SSAT-II) with those modifications specified under Subsection 2, Florida Statutes 232.246 (details of these provisions are provided in Rule 6A-1.943 and included in Appendix B). If exceptional students choose the regular test under one of the modifications provided by Rule 6A-1.943, they receive a standard diploma, but, if students classified in one of the five groups exempted by Section 232.247, Florida Statutes, followed the special standards applicable to their exceptionality, they receive a special diploma upon meeting those

requirements. Thus, all exceptional students may take the regular test in terms of content, but some may require modifications applicable to their exceptionality (such as large print or braille). If these exceptional students taking the modified test meet all other regular student graduation requirements, they receive a standard diploma.

The subjects in this investigation were equal samples of 10th grade nonhandicapped and high prevalence (educable mentally retarded, specific learning disabled, and emotionally handicapped) handicapped students enrolled in the public schools of the State of Florida (see Appendix A for examples of district eligibility criteria). These students must also have been pursuing a standard diploma as their certification of graduation and were, therefore, included in the March, 1984, Statewide Student Assessment Program. To be more specific, these students must have participated in the March, 1984, Statewide Student Assessment Test, Part II (SSAT-II) and have performance data in the form of test results with the Florida Statewide Student Assessment Program.

Concluding Statements

This study investigated the performance (percentages of mastery) of nonhandicapped and mildly handicapped (high incidence) 10th grade students enrolled in the State of Florida's public school system. These students were included in the 1984 statewide student assessment program with a standard diploma as the stated certificate of graduation. The investigation was concerned with comparisons of mildly handicapped students, among students with individual handicapping conditions and between those students with handicapping conditions and their nonhandicapped peers.

The data were collected from the Florida Statewide Student Assessment Program. Appropriate statistics were used in making decisions as to the significance or chance occurrences of differences in scores among the various types of students taking the examination.

CHAPTER IV
RESULTS

The intent of this study was to compare the performance of mildly handicapped and nonhandicapped students on their initial effort to pass the Florida State Student Assessment Test, Part II (SSAT-II). A logical analysis of the SSAT-II was completed; numbers and kinds of skills were listed and measures of test performance were used to compare differences between students with individual handicapping conditions and their nonhandicapped peers. Random samples, derived from procedures included in Statistical Programs for the Social Sciences (SPSSX), of 300 students each were drawn from statewide student performance data supplied by the Division of Student Assessment, Florida Department of Education. All students in these samples participated in the Florida Statewide Student Assessment Program and had chosen to take the SSAT-II with a standard State of Florida diploma as the certification of graduation.

Presentation of Data

The purpose of this chapter is to present the results of the study. Data and related outcomes are discussed in five sections corresponding to the statements under investigation. The subject statements for discussion include the following:

1. The performance of all four samples on the two standards of the SSAT-II were compared to give indications of overall performance.

2. Further comparisons were made by rank ordering the four groups under investigation on individual skills according to percentage of mastery achievement.

3. A skill by skill analysis was made for the three groups of mildly handicapped students and one group of nonhandicapped students to document the performance of individual samples on the skills assessed.

4. Each sample of students with individual handicapping conditions was compared with their nonhandicapped peers. A skill by skill comparison was undertaken to investigate the effects of the handicapping condition on the performance of students included in the three samples when compared to the sample of nonhandicapped peers.

5. Comparisons of achievement among the categories of handicapped students were made in order to document differences in performance among classifications of handicapped students.

Performance of Groups on Standards

The performance of students with individual handicapping conditions on the two standards (communication and mathematics) of the SSAT-II was compared among the categories of handicaps and to the performance of the nonhandicapped sample. These data were compared according to the percentage of students mastering or passing a standard (56 of 75 items correct in communication and 47 of 75 items correct in mathematics). The data in this analysis are presented in Table 2. A comparison indicated that the nonhandicapped sample consistently

Table 2

Performance of Groups on Standards

	Percentage (%) Passing	Actual Number Passing
SSAT-II, Communication Standard Mastery		
Nonhandicapped (n=300)	87.0	261
Emotionally Handicapped (n=300)	40.0	120
Specific Learning Disabled (n=300)	43.7	131
Educable Mentally Handicapped (n=300)	3.3	10
SSAT-II, Mathematics Standard Mastery		
Nonhandicapped (n=300)	87.3	262
Emotionally Handicapped (n=300)	40.3	121
Specific Learning Disabled (n=300)	37.7	113
Educable Mentally Handicapped (n=300)	2.0	6

achieved higher percentages of mastery than the three groups of handicapped students. While the LD and EH samples achieved 10 times the percentage of mastery of the EMH sample, neither group approached the proficiency of their nonhandicapped peers. A more specific analysis revealed the following:

a. Comparisons of the three samples of handicapped students with the sample of nonhandicapped students indicated wide differences among groups. A majority (87.0% and 87.3%) of nonhandicapped students mastered both the communications standard and the mathematics standard. Those students included in the sample classified as SLD achieved the highest percentage of mastery among the samples of handicapped students with 43.7% on the communication standard.

b. Comparisons of percentages of students mastering standards between those samples of students classified as SLD and EH with the sample of students classified EMH also indicated wide differences. Only 3.3% of the sample of EMH students achieved mastery on the communication standard, while only 2.0% of the same sample achieved passing criteria on the mathematics standard.

c. Samples of students classified as EH and SLD achieved mastery within 3.7% of one another on the communication standard (40% versus (43.7%) and only approximately three (2.6) percentage points on the mathematics standard (37.7% versus 40.3%).

In summary, the data indicated all four samples achieved a slightly higher percentage of students passing the communication standard compared to the mathematics standard. The percentage of nonhandicapped

students passing both standards far exceed the percentage passing any of the groups of handicapped students sampled. The SLD and EH samples clustered together slightly below 50% passing and the percentage of the EMH students' sample was substantially lower than all other groups.

Rank Ordering

The comparison groups were rank ordered for each communication and mathematics skill assessed by the SSAT-II. The results are presented in Tables 3 and 4. Specific comparisons and analysis of these data indicated the following:

1. For individual communication skills (results are presented in Table 3)
   a. The nonhandicapped students samples were consistently (15 of 15 skills) ranked above the other three groups on communication skills.
   b. The EMH sample was equally consistent (15 of 15 skills) in ranking below all other samples.
   c. Clustered together in the center of the four groups were the EH and the SLD samples. These last two samples alternated between the second and third ranking over all skills measured.
2. For individual mathematics skills (results are presented in Table 4)
   a. The nonhandicapped student sample ranked consistently (15 of 15 skills) higher than the other three groups.
   b. At the other extreme, the EMH sample was consistently (15 of 15 skills) ranked lower than all other groups.

Table 3

Rank Order of Achievement of Mastery for Four Sample Groups (n=300) on Measured Communication Skills (Reading and Writing)

Skill	High (1) to Low (4) Rank Order			
Reading	NH	EH	SLD	EMH
Main Idea (stated)	1	3	2	4
Cause/Effect	1	3	2	4
Written Directions	1	3	2	4
Main Idea (implied)	1	3	2	4
Paragraph Conclusion	1	3	2	4
Facts/Opinions	1	2	3	4
Pictures, Maps, Signs	1	3	2	4
Diagrams/Tables	1	2	3	4
Index/Dictionary	1	2	3	4
Identify Inform Sources	1	2	3	4
Writing				
Request Inform/Messages	1	3	2	4
Letter	1	2	3	4
Complete Forms	1	2	3	4
Money Order/Check	1	2	3	4

Table 4

Rank Order of Achievement of Mastery for Four Sample Groups (n=300) on Measured Mathematics Skills

Skill	High (1) to Low (4) Rank Order			
Mathematics	NH	EH	SLD	EMH
Averages 10 Numbers	1	2	3	4
1 or 2 Whole Number Oper.	1	2	3	4
Add/Sub. Proper Fractions	1	3	2	4
Decimals/Percents	1	2	3	4
Equivalent Dollars vs Coins	1	2	3	4
Comparison Shopping	1	2	3	4
Simple Interest	1	2	3	4
Purchases and Sales Tax	1	2	3	4
Rate of Discount	1	2	3	4
Time	1	2	3	4
Perimeter	1	2	3	4
Length, Width, Height	1	3	2	4
Capacity, Measurement	1	2	3	4
Mass/Weight Measurement	1	3	2	4
Graphs/Tables	1	2	3	4

c. The SLD and EH groups exchanged second and third positions, with the EH group achieving a greater number of third rankings.

Across all skills assessed on the SSAT-II, the nonhandicapped sample consistently achieved the extreme upper rankings, while the EMH sample was equally consistent at the lower extreme. Only minor differences occurred between the SLD and EH samples clustering at the central rankings of second and third.

Skill by Skill Analysis

A skill by skill comparison was made for the three samples of handicapped students (EH, SLD, EMH) and for their nonhandicapped peers. Addressed in this analysis was an examination of skills included in the communication and mathematics standards. The frequency of students passing and failing individual skills, not responding to items, and the mean number of items correct in that skill assessment are presented in Tables 5, 6, 7, 8, 9, 10, 11, and 12. Specific analysis of these data indicated the following:

1. For communication skills, comparisons revealed
   a. All groups scored highest in those skills involving writing, with the highest number of students being able to complete money orders and checks (273 nonhandicapped, 214 EH, 208 SLD, 102 EMH). These results are presented in Tables 5, 6, 7, and 8.
   b. Of the skills mastered by the EMH sample (see Table 8), writing skills indicated the largest number of students

Table 5

Skills Mastered on the SSAT, Part II, Communication Skills (Reading and Writing) by the Nonhandicapped Sample (n=300)

Skill	Frequency Passed	Failed	Not Tested	Mean Number of Items Correct
Reading				
Main Idea (stated)	244	47	9	4.23
Who, What, When	275	16	9	4.63
Cause/Effect	261	30	9	4.44
Written Directions	264	27	9	4.43
Main Idea (implied)	256	35	9	4.37
Paragraph Conclusion	249	42	9	4.24
Facts/Opinion	245	46	9	4.22
Pictures, Maps, Signs	256	35	9	4.28
Diagrams/Tables	229	62	9	4.02
Indexes/Dictionary	256	35	9	4.34
Identify Inform Sources	257	34	9	4.29
Writing				
Request Inform/Messages	267	24	9	4.52
Letter	226	65	9	3.98
Complete Forms	259	32	9	4.38
Money Order/Check	273	18	9	4.61

Table 6

Skills Mastered on the SSAT, Part II, Communication Skills (Reading and Writing) by the Emotionally Handicapped Sample (n=300)

Skill	Frequency Passed	Failed	Not Tested	Mean Number of Items Correct
Reading				
Main Idea (stated)	81	210	9	2.54
Who, What, When	179	112	9	3.55
Cause/Effect	123	168	9	2.98
Written Directions	137	154	9	2.99
Main Idea (implied)	117	174	9	2.79
Paragraph Conclusion	115	176	9	2.84
Facts/Opinion	98	193	9	2.66
Pictures, Maps, Signs	188	103	9	3.61
Diagrams/Tables	130	161	9	3.03
Indexes/Dictionary	144	147	9	3.13
Identify Inform Sources	169	122	9	3.14
Writing				
Request Inform/Messages	194	97	9	3.60
Letter	110	181	9	2.85
Complete Forms	178	113	9	3.46
Money Order/Check	214	77	9	3.98

Table 7

Skills Mastered on the SSAT, Part II, Communication Skills (Reading and Writing) by the Specific Learning Disabled Sample (n=300)

Skill	Frequency Passed	Failed	Not Tested	Mean Number of Items Correct
Reading				
Main Idea (stated)	122	149	29	2.73
Who, What, When	189	82	29	3.44
Cause/Effect	146	125	29	3.09
Written Directions	140	131	29	2.99
Main Idea (implied)	136	135	29	2.83
Paragraph Conclusion	114	157	29	2.76
Facts/Opinion	126	145	29	2.73
Pictures, Maps, Signs	156	112	29	3.17
Diagrams/Tables	119	152	29	2.87
Indexes/Dictionary	144	127	29	3.03
Identify Inform Sources	174	97	29	3.18
Writing				
Request Inform/Messages	169	102	29	3.24
Letter	108	163	29	2.69
Complete Forms	159	113	29	3.21
Money Order/Check	208	63	29	3.68

Table 8

Skills Mastered on the SSAT, Part II, Communication Skills (Reading and Writing) by the Educable Mentally Handicapped Sample (n=300)

Skill	Frequency Passed	Failed	Not Tested	Mean Number of Items Correct
Reading				
Main Idea (stated)	21	261	18	1.44
Who, What, When	58	224	18	2.12
Cause/Effect	36	246	18	1.89
Written Directions	33	249	18	1.55
Main Idea (implied)	26	256	18	1.53
Paragraph Conclusion	32	250	18	1.76
Facts/Opinion	16	266	18	1.40
Pictures, Maps, Signs	46	236	18	2.00
Diagrams/Tables	15	267	18	1.56
Indexes/Dictionary	42	240	18	1.92
Identify Inform Sources	65	217	18	1.92
Writing				
Request Inform/Messages	69	213	18	2.13
Letter	35	247	18	1.74
Complete Forms	80	202	18	2.32
Money Order/Check	102	180	18	2.60

passing; 69 EMH students achieved the writing skill that included taking accurate messages, 80 EMH students achieved the writing skill that required the completion of forms and, as previously stated, 102 EMH students achieved a passing criterion on the completion of money orders and checks.

c. The performance on communication skills (see Tables 6 and 7) for the EH and SLD samples was very similar. Ranges for the SLD students were from 108 to 208 passing and ranges for the EH students were from 81 to 214 passing indicating little difference in overall performance.

d. The nonhandicapped sample consistently had larger numbers passing the communication skills (range from 226 to 275 students passing) than did the samples of students with handicaps. These results are presented in Table 5.

e. Across all groups, little consistency was indicated when considering the lowest frequency of students achieving passing criterion on a skill. The sample of nonhandicapped students achieved the lowest frequency of achievement on letter writing (226 passed, 65 failed). Students classified as EH achieved the lowest frequency of passing on identifying the stated main idea of a paragraph (81 passed, 210 failed). Letter writing was mastered by fewer students in the SLD sample (108 passed, 163 failed)

when compared to the frequency of mastery on other communication skills. The sample of students classified as EMH achieved mastery only 15 times when attempting to ascertain information from diagrams or tables.

2. For mathematics skills, comparisons revealed
   a. All groups scored the highest frequency of achievement on those skills involving the determination of equivalent amounts of change and currency (274 nonhandicapped, 224 EH, 211 SLD, 70 EMH). These results are presented in Tables 9, 10, 11, and 12.
   b. The performance on mathematics skills for the SLD and EH samples were very similar (see Tables 10 and 11). The range of frequency passing for SLD students was between 54 and 211 and the range of frequency passing for the EH students was between 47 and 224.
   c. The frequencies of students in the EMH sample rarely approached the rates noted by any of the other groups (see Table 12). Except for the extremely high frequency noted on the skill dealing with money, the frequency of EMH students achieving mastery on any skill never reached above 27.

Table 9

Skills Mastered on the SSAT, Part II, Mathematics Skills by the Nonhandicapped Sample (n=300)

Skill	Frequency Passed	Failed	Not Tested	Mean Number of Items Correct
Averages 10 Numbers	259	32	9	4.35
1 or 2 Whole Number Oper.	273	18	9	4.55
Add/Sub. Proper Fractions	234	57	9	4.23
Decimals/Percents	260	31	9	4.32
Equivalent Dollars-Coins	274	17	9	4.57
Comparison Shopping	188	103	9	3.68
Simple Interest	210	81	9	3.84
Purchases and Sales Tax	226	65	9	3.97
Rate of Discount	208	83	9	3.95
Time	236	55	9	4.08
Perimeter	162	129	9	3.35
Length, Width, Height	151	140	9	3.21
Capacity, Measurement	161	130	9	3.45
Mass/Weight Measurement	179	112	9	3.59
Graphs/Tables	260	31	9	4.43

Table 10

Skills Mastered on the SSAT, Part II, Mathematics Skills by the Emotionally Handicapped Sample (n=300)

Skill	Frequency Passed	Failed	Not Tested	Mean Number of Items Correct
Averages 10 Numbers	137	161	2	3.08
1 or 2 Whole Number Oper.	174	124	2	3.45
Add/Sub. Proper Fractions	112	186	2	2.47
Decimals/Percents	152	146	2	3.34
Equivalent Dollars-Coins	224	74	2	4.12
Comparison Shopping	94	204	2	2.81
Simple Interest	89	209	2	2.77
Purchases and Sales Tax	113	183	4	2.89
Rate of Discount	103	195	2	2.76
Time	150	148	2	3.19
Perimeter	63	235	2	2.25
Length, Width, Height	48	250	2	2.14
Capacity, Measurement	55	243	2	2.26
Mass/Weight Measurement	47	251	2	2.24
Graphs/Tables	156	142	2	3.38

Table 11

Skills Mastered on the SSAT, Part II, Mathematics Skills by the Specific Learning Disabled Sample (n=300)

Skill	Frequency Passed	Failed	Not Tested	Mean Number of Items Correct
Averages 10 Numbers	125	153	22	2.73
1 or 2 Whole Number Oper.	156	122	22	3.13
Add/Sub. Proper Fractions	115	163	22	2.39
Decimals/Percents	127	151	22	2.82
Equivalent Dollars-Coins	211	67	22	3.80
Comparison Shopping	91	187	22	2.02
Simple Interest	69	200	31	2.15
Purchases and Sales Tax	105	173	22	2.68
Rate of Discount	77	201	22	2.35
Time	142	136	22	3.01
Perimeter	60	218	22	2.03
Length, Width, Height	54	224	22	2.08
Capacity, Measurement	54	224	22	2.08
Mass/Weight Measurement	68	216	16	2.14
Graphs/Tables	151	127	22	3.17

Table 12

Skills Mastered on the SSAT, Part II, Mathematics Skills by the Educable Mentally Handicapped Sample (n=300)

Skill	Frequency Passed	Failed	Not Tested	Mean Number of Items Correct
Averages 10 Numbers	14	270	16	1.16
1 or 2 Whole Number Oper.	27	257	16	1.35
Add/Sub. Proper Fractions	18	266	16	1.06
Decimals/Percents	20	264	16	1.70
Equivalent Dollars-Coins	76	214	10	2.25
Comparison Shopping	11	273	16	1.59
Simple Interest	13	271	16	1.45
Purchases and Sales Tax	11	273	16	1.35
Rate of Discount	21	263	16	1.52
Time	30	254	16	1.76
Perimeter	7	277	16	1.20
Length, Width, Height	12	272	16	1.58
Capacity, Measurement	8	276	16	1.35
Mass/Weight Measurement	11	273	16	1.37
Graphs/Tables	22	262	16	1.50

In summary, when comparisons are made between nonhandicapped and handicapped students, handicapped students appear to have difficulty achieving mastery of individual skills as measured on the SSAT-II. The nonhandicapped sample consistently achieved higher than all the handicapped students sampled on each of the skills measured. While the SLD and EH samples consistently scored higher than the EMH group, no sample of handicapped students scored equal to or higher than the nonhandicapped group. The samples of students classified as SLD and EH clustered within a narrow band of frequencies passed on each skill measured for both communication and mathematics. The sample of students classified as EMH consistently scored lowest of the four groups and appeared to have the most difficulty with abstract mathematics skills and had the most success with writing skills.

Three Samples of Handicapped Students Versus One Sample of Nonhandicapped Students

Each individual sample of handicapped students was compared with their nonhandicapped peers. A chi-square analysis was employed to judge interaction between categories of students and frequencies of individuals passing skills, failing skills, or not responding to items. Highest and lowest frequencies of students passing a skill are presented as Tables 13 and 14. Also included in the tables is the range of the chi-square statistic to indicate a summary of analysis across all skills. In general, a large, consistent interaction among categories and skills passed was noted. This interaction documented the influence of specific categories on the number of skills passed or failed. A more specific analysis of these data indicated the following for the samples under investigation:

1. For communication (The chi-square results are presented in Table 13, other percentages are generated from Tables 5-8.)
   a. Nonhandicapped students' performance scores varied from 91.7% mastery on the reading skill that identifies who, what, when, where, to 75.3% when required to complete a letter.
   b. The other samples (EH, SLD, EMH) scored highest in the completion of money orders and checks (71.3%, 69.3%, and 34%, respectively).
   c. While nonhandicapped students appeared to have little trouble in identifying the main idea of a paragraph (81.3%), the EH students appeared to have the most trouble with this skill (27%).
   d. The sample of EMH students generally did only about a tenth as well on the skills measured when compared with the nonhandicapped sample; even lower scores were achieved identifying fact from opinion (5.3%) and acquiring information from diagrams and tables (5%).
   e. In summary, the nonhandicapped sample did significantly better than the other samples under investigation. Samples of EH and SLD students' highest scores only approached the nonhandicapped sample's lowest scores. This trend is also noted when comparing the samples of EH and SLD students' lowest scores and the highest scores of the sample of EMH students.

Table 13

Number of Students Passing Communication Skills on the SSAT-II

Classification	Highest Number	Lowest Number
Nonhandicapped (n=300)	275 (91.7%)	226 (75.3%)
EH (n=300)	214 (71.3%)	81 (27.0%)
SLD (n=300)	208 (69.3%)	108 (36.0%)
EMH (n=300)	102 (34.0%)	15 (5.0%)

Table 14

Number of Students Passing Mathematics Skills on the SSAT-II

Classification	Highest Number	Lowest Number
Nonhandicapped (n=300)	274 (91.3%)	151 (50.3%)
EH (n=300)	224 (74.7%)	47 (15.7%)
SLD (n=300)	211 (70.3%)	54 (18.0%)
EMH (n=300)	70 (23.3%)	7 (2.3%)

2. For mathematics (The chi square results are presented in Table 14, other percentages are generated from Tables 9-12.)
   a. Ranges of performance were wider for all samples on the mathematics skills when compared to the communication skills (nonhandicapped) from 91.3% to 50.3%, EH from 74.7% to 15.7%, SLD from 70.3% to 18%, EMH from 23.3% to 2.3%.
   b. High scores were within 4.4% for EH and SLD students. The EMH sample scores were 46.7% below the other samples.
   c. In general, all samples did not perform as well on the mathematics skills as they did on communication skills. However, individual group performances had a much larger overlap in skills achievement. Unlike the communication skills, comparisons of mathematics skills' lows and highs were not as similar. For example, the nonhandicapped sample scored a low percentage of mastery of 50.3% (measuring length, width, and height), while the EH and SLD samples' highest percentage of mastery was approximately 70.3% and 74.7%, respectively (dealing with money).

Performance Among Various Categories of Handicaps

A comparison of achievement among samples of students classified as handicapped was made in order to document differences on skills. Given the criterion stated in the design of this investigation, the sample of students classified as EMH was not included in this comparison. The exclusion of this sample was based on the lack of

achievement scores approaching those of the other samples of handicapped students. To be more specific, the sample of EMH students never approached less than 10% difference in scores' cut-off set at the outset of this investigation.

A chi-square analysis of the number of students in the samples of EH and SLD achieving passing criteria was carried out and the results are reported on Tables 15 and 16. Highest and lowest frequencies of students passing a skill are presented. Also included is the range of the chi-square statistic and levels of significance to indicate a significant interaction or dependence between the categories of EH and SLD and the numbers of students achieving criteria. Specifically, the data indicated the following:

1. For communication skills (Outcomes of these comparisons are presented in Table 15.)
    a. The variation in the frequencies of the samples of EH and SLD students achieving passing criterion ranged from the same number of students achieving criteria on skills dealing with obtaining information from reference sources (144 students or 48%) to a difference of 32 students (10.7%) difference in skills measuring the distinction between fact and opinion.
    b. The EH sample performed most successfully on completing money orders or checks (214 or 71.3%) and the measured skill of taking messages accurately (194 or 64.7%).

Table 15

Number of Students Passing Communication Skills on the SSAT-II

Classification	High	Column %	Low	Column %
EH (n=300)	214 (71.3%)	70.3	81 (27.0%)	33.8
SLD (n=300)	208 (69.3%)	70.3	108 (36.0%)	36.8

Table 16

Number of Students Passing Mathematics Skills on the SSAT-II

Classification	High	Column %	Low	Column %
EH (n=300)	224 (74.7%)	72.5	47 (15.7%)	19.2
SLD (n=300)	211 (70.3%)	72.5	54 (18.0%)	18.2

c. The SLD sample did equally well on the skill requiring check completion (208 or 69.3%), but did not fare as well on the skill of taking messages (169 or 56.3%).

d. Both groups achieved poorer scores (81 EH or 27.0% and 102 SLD or 34.0%) on the skill requiring the determination of the stated main idea of the paragraph when compared to scores on the skill requiring the determination of the implied main idea of a paragraph (117 EH or 39.0% and 136 SLD or 45.3%).

2. For mathematics skills (Outcomes of these comparisons are presented in Table 16.)

a. Both groups did poorest on skills involving measuring height, weight, or length with 47 (15.7%) of the EH sample and 54 (18%) of the SLD sample achieving mastery.

b. Highest frequencies of students achieving criteria on skills occurred when measuring currency equivalents (224 EH or 74.7% and 211 SLD or 70.3%).

In summary, the EH and the SLD samples' scores approached each other when comparing the frequencies of students achieving passing criterion on the skills measured by the SSAT-II. It should be noted, however, that the chi-square analysis revealed that these samples of students showed a significant interaction between the skills measured and responses. However small the differences, they are accountable to this interaction and not due to chance distribution of frequencies.

Overall, both samples did slightly better on the communication skills, with a lower and wider range of achievement on the mathematics

skills measured. Individual differences on particular skills never varied more than 9% of the students in the sample. All scores on the communication skills clustered around 50% with extraordinary variations of up to 20%. The samples displayed a wide variation on the mathematics skills, with measured percentages ranging from 15.7% to 74.7%.

Summary of Results

The purpose of this chapter was to present the results of a comparative study of the performance of mildly handicapped and nonhandicapped students on their initial effort to pass the Florida State Assessment Test, Part II (SSAT-II). Both the EMH and the nonhandicapped samples consistently constituted the extremes in the achievement of passing criteria on this assessment instrument. The EH and SLD samples were equally consistent in constituting mid-range of performance, with little difference noted in the achievement of passing criteria. Due to this consistency in the performance of the four samples of students, the four samples will be grouped and discussed as the nonhandicapped sample, the combined EH and SLD samples, and the EMH sample. The outcome of the chi-square analysis will be addressed separately.

The Nonhandicapped Sample (n=300)

The sample of nonhandicapped students consistently had significantly higher frequencies of students achieving mastery on both the communication and mathematics skills when compared to the other three samples of students. This percentage of students mastering skills was approximately twice that of students achieving mastery from any of the other student

samples. The difference is most apparent in comparing the two broad standards measured (communication and mathematics). Of the nonhandicapped students sampled, 87.0% and 87.3% achieved the communication and mathematics standards. The next highest achievement was noted by the SLD sample on the communication standard (43.7%) and the EH sample on the mathematics standard (40.3%).

A skill by skill analysis revealed that the nonhandicapped sample achieved the highest percentage of students passing the skill identifying who, what, and where in a paragraph (275 students or 91.7% passed) followed closely by the completion of a check or money order (273 or 91.0%). Poorest achievement was noted on those mathematics skills requiring the measurement of height, weight, and length (151 or 50.3%), followed closely by the measurement of capacity (161 or 53.7%).

Finally, the sample of nonhandicapped students appeared to have little problem achieving passing criteria on those communication skills measured (75.3% to 91.6% of the students passing the skills). The mathematics skills, on the other hand, gave rise to a wider variation of performance with the lowest percentages clustering at approximately 50% and the highest percentage clustering at approximately 90%.

The EH and the SLD Samples (n=300 each)

The samples of EH and SLD students are addressed together because of the similarity in performance between the two groups. Percentages of students achieving criteria on the broad standard measures were within 4% of each other (40.0% versus 43.7% on communication and 40.3% versus 37.7% on mathematics, respectively). A higher percentage of

SLD students passed the communication standard (43.7%), while a higher percentage of EH students achieved passing criteria on the mathematics standard (40.3%).

Further support for the similarity in performance of EH and SLD students becomes apparent when rank ordering the four samples under investigation. The EH sample was ranked second behind the nonhandicapped students on 11 of the 15 mathematics skills measured. The SLD students ranked second behind nonhandicapped sample on 8 of the 15 skills measured under the communication standard.

A skill by skill analysis of the SLD and EH samples revealed more variation on individual communication skills than was noted for the nonhandicapped sample. The range of EH students achieving skills varied from 81 (27.0%) on identifying who, what, where to 214 (71.3%) on completing a money order or check. The students in the SLD sample displayed a similar variation, with 108 (36.0%) on letter writing to 208 (69.3%) on completing a money order or a check. The mathematics skills gave rise to wider differences, with the EH and SLD students scoring from 15.7% (measurement) to 74.7% (determining equivalent currency) and 18.0% (measurement) to 70.3% (determining equivalent currency), respectively.

The EH and SLD students sampled performed similarly on both standards. However, a comparison of the percentages of students passing individual skills on the mathematics standard displayed more variation than those passing individual skills in communication. The majority of the percentages of students passing skills in these

two samples clustered around 40% on both the communication and mathematics skills assessed. This performance is more than twice the level of achievement when compared to the EMH sample. However, when compared to the nonhandicapped group, the EMH group's level of achievement was less than half.

The EMH Sample (n=300)

The percentages of students achieving passing criteria in the EMH sample consistently fell far below the percentages of students included in the other comparison samples. On the communication standard only 10 (3.3%) of the 300 students sampled achieved passing criteria. This low performance is supported by an equally low number of students passing the mathematics standard (6 students or 2%).

A skill by skill analysis across the two standards revealed consistently low percentages (below 34.0% or fewer than 102 students) of students passing individual skills. On the communication skills, highest percentages were achieved on completion of money orders or checks (102 students or 34.0%) followed by the skill measuring the ability to complete forms (80 students or 26.7%). Poorest percentages of passing were achieved on reading diagrams and tables (15 students or 5.0%) and identifying fact from opinion (16 students or 5.3%). Mathematics skills varied from identifying equivalent currency (70 students or 23.3%) to solving problems involving capacity and measurement (8 students or 2.7%).

The sample of students classified as EMH apparently had difficulty achieving passing criteria on skills included on both the communication and the mathematics standards. With few exceptions, comparisons of

students in this sample rarely approached the proficiency of the students included in the other samples.

The Chi-Square Analysis

The first chi-square analysis was executed comparing all four categories of students (n=1200) with three response categories (passing a skill, failing a skill, or not tested). This analysis revealed a significant interaction or dependence among all four categories of students and the three categories of responses across the 30 skills measured in the communications and mathematics standards.

Due to the magnitude of this significance, a second criterion of more than 10% difference between categories would be indicative of significance. After this criterion was applied, a second chi-square was executed.

The second chi-square was used to compare the EH and the SLD samples across skill responses. Only the EH and SLD samples were included in this analysis because of the criterion of less than 10% difference between groups. This second analysis revealed significant dependence across the categories and responses per skill despite the closeness of actual frequencies.

Overall performance of these comparison groups indicated significant interaction across categories of samples and across the choices of response per skill. The nonhandicapped and the EMH samples constituted the highest percentage passing and the lowest percentage passing, respectively. The EH and the SLD samples clustered together with approximately 40% of the samples achieving passing criteria.

CHAPTER V
SUMMARY, DISCUSSION, AND IMPLICATIONS

Summary

A majority of the states in the United States are now involved, in some way, in the minimum competency testing movement. Many states, including Florida, are under legislative mandate to require students to pass competency tests in order to qualify for high school graduation. As states and local districts have rushed to adopt minimum competency standards, some concerns have been expressed about the consequences this trend could have on the lives of students and on schools (Brickell, 1978).

There has also been considerable discussion of how the tests should be constructed, what should constitute a passing score, and the influence of cultural and socioeconomic factors on competency test performance. Very little seems to have been resolved on these questions and the eventual impact of these requirements on public schooling is far from clear.

In the midst of questions and controversies surrounding the minimum competency movement, the issue of what happens to handicapped students in states requiring these tests has not been adequately examined. It has been suggested by special educators that minimum competency testing may systematically deny handicapped students the

opportunity to earn a high school diploma or lead to the creation of a "special education diploma," carrying with it an obvious stigma outside the state of issuance. It is also clear that unless special provisions are made possible for students with sensory disorders or limitations in movement, they may not be able to validly demonstrate their competence through testing. Many mildly handicapped youngsters (i.e., educable mentally handicapped, specific learning disabled, and emotionally handicapped students) have, almost by definition, had difficulty in taking standardized tests. Through such a test format these students may not show the knowledge and skills they actually possess (Smith & Jenkins, 1980).

Florida began a compulsory statewide assessment program with its 1976 Accountability Act. All students were required to master specified minimum performance standards in reading, writing, and mathematics. No provisions were made for handicapped students until the law was amended in 1978. At that point, exceptional students classified as educable mentally retarded, trainable mentally retarded, emotionally handicapped, specific learning disabled, or hearing impaired were exempted from the testing requirement for graduation or promotion purposes. These students could, however, participate in the testing program if they so chose. In 1977, a very low percentage of Florida's handicapped students passed skills tested on which nonhandicapped students did comparatively well. The assumption was made that the handicap itself was being measured rather than the student's ability (Grise, 1980). With this essential theme of keeping the needs and

limitations of the handicapped child in mind, a multifaceted testing accommodation program was begun. Once this foundation was carefully set for providing competency testing programs for handicapped students, it was hoped that wide range effects would ultimately revolutionize the exceptional student curriculum to the benefit of the children, specifically, and society in general.

To date, little attention has been paid to the impact minimum competency tests might have on handicapped students. This study was undertaken to examine some of the implications of minimum competency testing by comparing levels of achievement of mildly handicapped students and their nonhandicapped peers.

Statement of the Problem

Through the Florida Educational Accountability Act of 1976, the Florida Legislature required all students to master (SSAT-I) and apply (SSAT-II) specified minimum performance standards in reading, writing, and mathematics in order to receive a standard State of Florida diploma (Grise, 1980). Although modifications in test format have been made to accommodate persons with certain handicaps, handicapped students are tested and expected to achieve mastery on the same content as regular education students. Ample information can be found in the literature on minimum competency testing; however, little information concerning the achievement of mastery for handicapped students is available. This relationship of the levels of mastery achievement among three equal samples of mildly handicapped students and one equal sample of nonhandicapped students was the problem addressed in this research.

Description of Design

This study was an ex post facto comparison of the performance of mildly handicapped and nonhandicapped students on their initial effort to pass Florida's State Student Assessment Test, Part II (SSAT-II). This administration occurred in the spring (March, 1984) of the students' sophomore (10th) year.

An analysis of the SSAT-II was completed; numbers and kinds of skills (e.g., defining words, following directions) were reported. The frequencies and percentages of students mastering each skill tested were tabulated. Additionally, frequencies and percentages of students achieving passing criteria on two broad standards were reported and compared. These data provided a basis for comparing the performance of students with individual handicapping conditions among categories of students and between categories of students and their nonhandicapped peers.

The outcomes analyzed in this research were as follows:

1. The performance of students with individual handicapping conditions on the two standards (communication and mathematics) was compared among handicapping conditions and with the performance of their nonhandicapped peers.

2. Comparisons of performance were made by rank ordering the four samples under investigation; nonhandicapped, emotionally handicapped (EH), specific learning disabled (SLD), and educable mentally handicapped (EMH), skill by skill according to achievement of mastery.

3. A skill by skill analysis was made for students included in the three samples of mildly handicapping conditions (EH, SLD, EMH) and for the sample of their nonhandicapped peers. Measures of variability were reported.

4. A skill by skill comparison was made between samples of students included in each individual handicapping condition and the sample of their nonhandicapped peers.

5. A skill by skill comparison was made among the samples of students included in each individual handicapping condition.

Data Analysis

The data for this study were assured by and later obtained from Ms. Diane Withers-Julian of the Florida Department of Education--Division of Public Schools, Bureau of Program Support Services, Student Assessment Section. The State of Florida records the scores of the students participating in the Florida Statewide Student Assessment Program. Individual scores on skill achievement and standard achievement were reported as well as percentages of mastery on individual skills and standards. The data included in this study were analyzed by reporting both the percentages of mastery and raw scores achieved by equal random samples (n=300) of four groups of students on skills and standards included on the SSAT-II.

A second comparison was made among the four groups of students using the chi-square test of association. This nonparametric analysis strategy was employed to determine the association between categories of samples and responses (passed, failed, not tested). Due to the size

of the samples (n=300 each) and the large variation among the performances of certain samples, a difference of more than 10 percentage points on skills achieved was established to indicate significance without further statistical analysis.

With this criterion, a second chi-square procedure was necessary only in comparing the samples of EH and SLD students' skill achievement. Students classified as EMH and those nonhandicapped students were not included in this procedure due to the large differences in achievement when comparing these two groups with any other group.

Subjects

Students who were completing their 10th year in the public schools in Florida and were in pursuit of a standard diploma as the certificate of graduation were included in this investigation. Three equal samples (n=300 each of high prevalence mildly handicapped students) and one equal sample of nonhandicapped students (n=300) constituted the four groups under study. These students participated in the March, 1984, state student assessment program and had performance data on file with the Florida Statewide Student Assessment Program Office.

Discussion

The remainder of this chapter consists of summaries of the results of this investigation, discussion of these findings in relation to specific questions, and implications for future research. Due to the consistency of the findings of this research, skill by skill comparisons

were deemed redundant and replaced by discussions of individual samples of students. These discussions are preceded by comparisons of student performance on the two standards (communication and mathematics) and the rank ordering of the four samples. Comparisons of achievement are addreseed within the discussions of discrete samples of students when appropriate.

Topics included in this discussion are the following:

1. A comparison of student performance on the two standards of communication and mathematics.

2. A discussion of the results of rank ordering the four samples under investigation.

3. A skill by skill analysis of the four samples under investigation. Included in these discussions were appropriate comparisons of student performance among the various categories of students with handicapping conditions and the sample of nonhandicapped students.

4. Closing remarks.

Performance on the Two Standards (Communication and Mathematics)

A standard by standard comparison among the three categories of handicapped students and one sample of nonhandicapped students indicated a wide variation among the nonhandicapped student sample and the three groups of handicapped students. These differences were consistent across standards and are presented in Table 2. Results from this comparison included the following:

1. Of the 300 students included in the nonhandicapped sample, 87.0% achieved mastery on the communication and 87.3% on the mathematics

standard. This percentage of students mastering a standard is approximately twice the percentage of student mastery obtained by the equal sample of SLD students (43.7% on the communication standard), which was also the highest percentage of mastery among the three samples of handicapped students.

2. Only 3.3% and 2% of the sample of students classified as EMH achieved passing criterion on the communication and mathematics standard, respectively. This percentage of mastery is approximately one tenth the percentage of the poorest mastery level obtained by the other three samples (37.7% of the sample of students classified as SLD on the mathematics standard). The magnitude of this difference is further illustrated when the percentages of students are converted to numbers of students. The 3.3% and 2% of the sample of students classified as EMH translated to only 10 and 6 students in the sample of 300 achieving passing criterion on the communication and the mathematics standards, respectively. This low percentage of achievement has added significance when one considers that 261 (87.0%) and 262 (87.3%) students included in the nonhandicapped sample achieved passing criterion on the standards.

3. Both the students in the EH sample and the SLD sample achieved approximately 40% passing criterion for both the communication and the mathematics standard, with a small 3.7% variation in performance on the communication standard.

While the performance of these four large samples, on the standards assessed by Florida's MCT program, are not necessarily representative of performances and outcomes of students elsewhere, the results

reinforce concerns over the participation of exceptional students in MCT programs. The State of Florida does not require participation of all handicapped students in the state's MCT program; however, the state does require the passing of the two standards included on the SSAT-II in order to qualify for a standard diploma upon graduation. The results of this comparison suggest that one consequence of this state's MCT program is large percentages of handicapped students are not receiving standard diplomas.

McClung and Pullin (1978) suggested that in determining a competency standards policy for handicapped students, education agencies must decide whether the same or different diplomas will be issued to handicapped and nonhandicapped students. If the same diploma is to be awarded, the agencies must then decide whether the same or different standards and assessment procedures will be applied. There are various ramifications to each of these options.

This preliminary examination of a standard by standard comparison of these four samples suggests that, if the same diploma is issued upon meeting the same standards even using modified assessment procedures, many handicapped students will fail to attain a high school diploma and thus will face difficulties in the job market (Franzosa, 1984; Hasazi et al., 1985). Such a policy does, however, allow the school to insure that a diploma represents certain common, minimum skills among all graduates.

To issue the same diploma but require different standards or procedures for handicapped students can also be problematic. There

is so much variation within the handicapped population that establishing standards across that population, or even within categories, is likely to be as unfair for some individuals as would be using the same standards as those used with nonhandicapped students (Pullin, 1980).

One solution offered by Safer (1980) would be to determine on an individual basis, perhaps by the individualized education program (IEP) committee of each handicapped student, which standards or assessment procedures are to be required and whether or not those standards have been met. This approach would seem to allow for appropriate consideration of and accommodation to specific handicapping conditions and differences among handicapped individuals. On the other hand, the author points out that problems of equity and consistency across handicapped students can arise, with some students being denied a diploma even though they have demonstrated the same level of competency as other students who received diplomas.

The results of the comparisons included in this research indicate that the movement toward minimum competency standards and testing can and does have more severe consequences for handicapped students than it does for nonhandicapped students. Given the low percentages of handicapped students achieving passing criteria in this investigation, alternative policies must be examined. Although the alternative of determining policies on an individual basis presents problems in terms of consistency and equity across handicapped students, it appears to be a valid approach which is the least likely, in McClung and Pullin's (1978) terms, to "do harm" and discriminate against the handicapped student.

Rank Ordering

The rank ordering of the four samples of students further supported the consistent findings of the standard by standard comparisons. Tables 3 and 4 illustrated the following:

1. The nonhandicapped student sample consistently ranked highest (15 of 15 skills) when compared to the samples of handicapped students.

2. The sample of EMH students consistently ranked lowest (15 of 15 skills) of the four samples compared.

3. The samples of EH and SLD students clustered at the center of the rankings. On the mathematics skills the sample of students classified as EH ranked second behind the nonhandicapped student sample on 12 of 15 skills. Such consistency was not noted on the communication skills assessed.

The rank ordering of the four samples (1200 students) under investigation would appear to be consistent with the performance of the four samples on both the communication and mathematics standards. This trend in performance is further supported by Serow and O'Brien (1983) using data from the North Carolina Competency Test. These authors determined that nonhandicapped pupils generally fared better than the handicapped students on all measures. However, sharp differences were found across categories of exceptionality, with results for learning-disabled more closely approaching those of the nonhandicapped. EMH pupils showed weak initial performance, thus, Serow and O'Brien concluded that EMH students should be provided with intensive remediation to achieve MCT mastery. However, the authors contended

that even under the best of circumstances it appeared unlikely that a majority of EMH pupils could pass a high school MCT.

Similar results were reported by McKinney (1983) in investigating different factors affecting the performance of handicapped students on the fall administration, 1978, of the North Carolina Competency Test. Only 5% of the EMH students passed both sections of the assessment. The SLD students did 10 times as well as the EMH students. However, no sample of handicapped students approached the level of proficiency noted for the nonhandicapped groups. Very little variation in results occurred across conditions of test administration and type of personnel who administered the MCT to handicapped students. Though limited by the nature of the MCT in North Carolina, the author cites a number of issues that deserve the attention of special educators in other states.

First, although the McKinney results would not justify a blanket policy of excluding handicapped students from the MCT program, the challenge remains to devise an acceptable alternative for those students who have little chance for success. Even though modifications were beneficial to educable mentally handicapped students, their probability of passing was still quite low. Second, the efficacy of specific test modifications for different handicaps has yet to be determined. Finally, McKinney called for more research and program development to determine the factors which place students at risk for MCT failure.

Although the data in these two North Carolina research projects were limited by size of samples and geographic location, the results

were mirrored in the larger amount of data collected from Florida's MCT program and analyzed in this investigation. Nonhandicapped students achieved passing criterion at a far greater rate than any of the handicapped students sampled. Across these three investigations, the sample of students classified as EMH consistently achieved passing far below the other categories of handicapping conditions and approximately one tenth the rate of the sample of nonhandicapped students. In light of these findings, the greater degree of success noted by members of the EH and SLD samples would eliminate sweeping exemptions. Instead, perhaps the fairest and most realistic policy would be to exempt only those students identified as mentally handicapped. Unless states come to acknowledge the disadvantages indicated by the performance of EMH students within MCT programs, as indicated by this investigation and supported by the North Carolina studies (McKinney, 1983; Serow & O'Brien, 1983), it can be anticipated that the negative consequences of such programs will continue to fall disproportionately on these students.

Skill by Skill Analysis

A skill by skill analysis was completed and significance established in order to assess performance of individual samples on individual skills. This discussion will be divided into four sections corresponding to the four samples under investigation.

Nonhandicapped. The students achieving passing criteria on the skills assessed under the communication standard clustered in the 80% to 90% range (see Table 5). The highest percentage of students achieving

passing criteria was recorded in those skills involving reading with 91.7% of the students achieving the skill when required to determine who, what, and where in a paragraph and 91.0% of the students achieving the skill requiring the completion of a money order or check. However, this high percentage of students achieving written skills was not noted when students were required to write a letter. Only 75.3% of the students in the sample achieved this skill which was the lowest percentage of students passing a skill included in the communication standard. It should be noted that the writing subsection of the communication standard is teacher graded. This subjective grading may give rise to speculation as to whether different criteria were at play across the sample of nonhandicapped students according to the person evaluating the skill. Other low rates of achievement were attained when students were required to obtain information from graphs and tables (76.3% passing) and when students were required to distinguish between fact and opinion (81.7% passing).

It becomes apparent that nonhandicapped students in this sample, when compared to the other samples, had little difficulty in achieving passing criteria on the skills assessed under the communication standard. The outstanding performance characteristics in the skills assessed would be the extremes of achievement under the written subsection of the standard. This variation gives rise to concern over the subjectivity of teacher versus machine graded skills. It appears while "graders" are satisfied with the students' ability to fill in the blanks, many are dissatisfied with the students' performance in the skills necessary

to produce a written letter of request, adjustment, complaint, application, or opinion. Also of note are the lower percentages of students achievement on those reading skills requiring the obtaining of information from diagrams and tables and the skill of distinguishing between fact and opinion. These two skills would seem to require a degree of abstract thinking. However, these lower rates of achievement were not noted on other skills requiring similar skills of abstract thinking such as identifying the implied main idea of a paragraph or obtaining information from pictures, maps, or signs.

In summary, although these variations occurred, overall performance for this sample was within a range of 16.4% (i.e., students achieving the skill or not). This 16.4% would only account for approximately 49 students in the sample of 300, however, it would give some indications of possible strengths and weaknesses in students' performances and/or construction of the test instrument.

The skills assessed in mathematics indicated a greater variability in performance (see Table 9). The range of percentages of students passing a skill extended from 50.3% on solving problems related to linear measurement to 91.3% of the sample being able to determine equivalent amounts of currency.

The low percentages of students achieving a skill was consistent across all the skills that required measurement (perimeter--54.0%, linear--50.3%, and capacity--53.7%). These performance scores are 5.7% below the next lowest percentage of achievement (59.7% involving mass and weight measurement).

As cited earlier, the highest percentage of student achievement was reported on the skill requiring the determination of equivalent amounts of currency. This rate of achievement was most closely approximated when students were required to solve whole number operations (91.0% passing) and average up to 10 numbers (86.3% passing).

The wide variation in the percentages of students achieving mathematics skills on SSAT-II was consistent across all samples included in this investigation and would appear to indicate less success among students in the acquisition of those mathematics skills included on the assessment instrument. Glass (1978a) offered a different opinion when he reviewed Florida's test results. The author contended the performance of students on the mathematics skills might not be a reflection of educational acquisition, but rather just a reflection of the test construction. In other words, the skills and questions included on the mathematics standard were more difficult than those included on the communication standard.

Emotionally handicapped. The students included in the sample of EH students that achieved passing criteria on the skills included in the communication standard varied from 27.0% achieving the skill requiring the identification of the stated main idea of a paragraph to 71.3% of the students being able to complete a money order or a check. As with the sample of nonhandicapped students, this sample achieved a wide variation in the percentages of students passing those skills included in the writing subsection. Other skills at the lower end of the performance achieved by this sample included the skills requiring

the distinction between fact and opinion (32.7% passing), and generalizing or drawing conclusions from a paragraph (38.3% passing). On the upper end of the range of scores were the skills requiring writing requests for information (64.7%) and reading pictures, maps, and signs (62.7%).

Students in the EH sample appeared to experience difficulty with many of the skills included in the communication standard of the SSAT-II presented in Table 6. A wide variation in performance within the sample was noted; however, approximately 40% of the students sampled was able to pass the majority of the skills assessed. Overall, patterns in the performance of the sample of EH students indicated a lower success rate in those skills requiring more abstract functioning included in distinguishing fact from opinion and making generalizations and drawing conclusions from paragraphs. Performance on the communication skills was far below that of the nonhandicapped sample; however, achievement patterns were similar.

The data reported for 10th grade students referred to as EH suggested that approximately 40% of this sample had proficiency in reading sufficient to meet the standards for a high school diploma. Further, these data indicated that there are varying degrees of reading proficiency among this sample of EH adolescents. However, this range of performance indicated that the tendency to equate reading disability and behavior disorder is inaccurate. Thus, consideration must be given to those youngsters who are at least minimally proficient in reading, for they constitute some 40% of the sample. These variations

in patterns of reading proficiency and the type, degree, and character of students' behavior disorders must be considered in order to develop placement and improvement in instructional plans.

If behaviorally disordered students are to have an equal chance to succeed, reading instruction for them must cover the same competencies as it does for other students. For example, on a test of basic skills a reading section might include a passage of 500 words. This story would be followed by 20 multiple choice questions. Some of these questions require the student to return to certain paragraphs in the story and to answer the questions specific to that paragraph. The test situation requires considerable concentration, an element of speed because the test is timed, and a number of different tasks including reading the story, locating the designated paragraph, and answering multiple-choice questions (Wallace & Kauffman, 1986). Reading instruction for the emotionally handicapped must include most if not all of these types of activities if the student is to have an opportunity to perform successfully on the test.

In general, the sample of students classified as EH displayed wide variability in achievement on mathematics skills measured (see Table 10). As previously noted, the achievement of the total standard was accomplished by 40.3% of the students. Patterns of performance corresponded to those noted on the communication skills with weaker showings on skills that required an amount of abstract thinking such as measurement of area and capacity.

With the current emphasis on the basic skills, one can hardly overstress the importance of assisting students learn basic mathematical

skills. The results of this investigation indicate a need to stress a more balanced and comprehensive program in mathematics. Skills need to be applied in varied contexts and, until students can use them in varied contexts, it is hardly appropriate to say they are skillful. It appears that what is required is not an exclusive focus on a specific task but, rather, a more concerted effort to apply that task to practical situations (Bilsky & Judd, 1986).

For whatever reasons, a large number of emotionally handicapped students lack fundamental concepts and skills needed to explore mathematical ideas in the world around them and to use these ideas successfully in their daily lives. These students have difficulty with much of the content associated with the SSAT-II, including basic arithmetic. Establishing blame for misunderstanding, gaps in knowledge, and negative attitudes about mathematics is of little value. Instead, it is important to identify each student's strengths and build on these within the limitations of time and resources available. This, of course, is the difficulty, given the stress placed on mastering those skills included on the assessment.

Minimum proficiency in the skills included in the SSAT-II are considered essential by many educators. This inclusion of basic life skills testing in the secondary schools has modified programming for students with behavior disorders. However, if one were to review the educational experiences and curricular programs for these students, it appears unlikely that one would find evidence that these areas are sufficiently covered and ably presented. Wherein does the responsibility

for failure rest? If the handicapped student is excused or excluded from the assessment program, educators may be permitting handicapped students to leave school without the minimum set of competencies deemed appropriate for nonhandicapped students. As this investigation suggested, far too few students with emotional handicaps are acquiring minimum literacy competencies.

Educators must recognize the necessity of meeting the individual needs of pupils. Rubin and Balow (1971) contended that, perhaps, the large proportion of students identified as having learning or behavior disorders is a reflection of the refusal of the educational system to accommodate individual differences. By making the same academic requirements of each student it appears that Florida schools may be forcing many students into the role of academic failures. Through an insistence on sameness in performance on statewide assessment tests, the schools seem to be creating conditions which ignore the specific needs of students classified as EH (Gerler, 1986) and, as this research indicated, those classified as SLD and EMH as well.

Thus, by demanding uniformity Florida schools may contribute to the learning and behavior problems of the very students whose optimum development it is supposed to facilitate. This contribution appears to manifest itself in the poor achievement of passing criterion on those skills measured by the SSAT-II.

Specific learning disabled. The students included in the SLD sample performed similar to the students included in the EH sample on the communication skills assessed. Highs and lows in percentages of students achieving passing criteria were noted on the same skills, with

one notable exception--identifying the stated main idea of a paragraph. Of the SLD sample, 40.6% were able to achieve passing criterion, while only 27.0% of the students in the EH sample achieved this criterion. This 13.6% spread constituted the largest variation between the SLD and EH samples on any of the skills included on the communication standard.

Similar results were also achieved by the EH and the SLD samples on the mathematics skills. Included in this similarity was a wide variation in overall performance with high and low percentages being achieved on the same skills (currency and measurement). This consistent relationship is supported by noting the largest difference between samples. Only 8.6% difference was noted on the skill requiring the student to solve problems involving rate of discount (EH--34.3% and SLD--25.7% passing) and 6.0% difference was noted on the skill requiring students to solve real world problems involving one or two distinct whole number operations (EH--58.0% and SLD--52.0% passing).

This similarity in the performance of these two samples would seem to support the similarity in educational acquisition between these students included in two classifications of mildly handicapping conditions (Henk et al., 1986; Kauffman, 1981; Marsh, Price, & Smith, 1983). If this assessment instrument, SSAT-II, is used as criterion for assessing students' academic achievement, then the samples of EH and SLD students appear to achieve more similar than different. Success was noted on most of the same skills, difficulty was noted on most of the same skills and differences in performance were small.

Although the EH and SLD students sampled did not appear to be particularly successful on the SSAT-II, striking similarities in performance were noted.

Florida provides extensive test modifications including flexible scheduling, flexible settings, variations in the recording of answers, revised test format, and auditory aids. SLD and EH students are allowed all these modifications (Safer, 1980). A large print edition is thought to aid these students with visual distractability and reduce frustration. The auditory aids are thought to alleviate these students' decoding problems. These types of modifications are allowed for portions of the test that are not specifically designed to measure a student's reading skills. Florida has attempted to ease the stress of reading by furnishing modifications but requires students to read the words for comprehension. Brief test sessions are allowed to further reduce the pressure and assist in the prevention of mental, emotional, and physical exhaustion. Being able to mark in the test booklet is thought to circumvent the problem of transfering answers. The flexibility of setting initiated by Florida was thought to reduce tension by allowing students to be tested with a group of peers, thus, displaying their maximum potential.

Amos (1980) suggested that, with these modifications, most SLD high school students should have the capability to pass a basic skills examination. The author concurred with Guerriro (1978) and Deshler (1984) that MCTs are generally tests of practical application of functional/survival skills (reading and math) and, if the exit competency tests are constructed of these basic skills items, there

is little reason why the SLD students should not take, and pass, the test.

This proposition that SLD, and for that matter EH, students can and should be able to master the skills currently tested on MCTs, given the modifications, does not appear to apply to over half of those students benefiting from such modifications in the State of Florida. Further documentation of the performance of handicapped students in North Carolina (McKinney, 1983; Serow & O'Brien, 1983) and previously in the State of Florida (Safer, 1980) lends support to this current investigation and leads to concerns over those large percentages of students still unable to pass MCTs. SLD and EH students are allowed all the modifications specified by both the State of North Carolina and the State of Florida, but these students continue to perform at significantly lower levels of mastery when compared to their nonhandicapped peers.

It is not in the scope of this investigation to offer statements concerning programs or assessment procedures. However, given the consistency found in the performance of these two groups of mildly handicapped students, it is within the scope of this investigation to question the validity of test modifications in assisting these populations of students to achieve mastery of skills on this specific test. Variations in test administration or format that leads to mastery achievement of only 40% to 50% of the students would not appear to be particularly effective when compared to nonhandicapped students using no such variations in administration. Educators have been concerned with types of accommodation for handicapped students since

the inception of MCT programs (Citron, 1982; Pullin, 1980) and Florida established such modifications for handicapped students in 1977. However, with this administration in 1984, only approximately 50% of the SLD and EH students involved in the testing program were achieving mastery criteria. A reexamination of these modifications offered those groups of handicapped students appears to be necessary.

Educable mentally handicapped. The sample of students classified as EMH performed poorly on all skills assessed on the communication standard (see Table 8). Percentages of students achieving skills ranged from 34.0% on the completion of a money order or check to 5.0% on the skill that requires the obtaining of appropriate information from diagrams, tables, graphs, or schedules.

Once again those skills included in the writing subsection were achieved by a high percentage of students when compared to other skills measured. However, in this sample of students, the skill requiring the composition of a letter of request was not one of the skills with the lowest achievement rate (11.7% passing). This higher level of achievement was notably different from the other samples. Skills with lower rates of achievement included determining the stated main idea of a paragraph (7.0% passing), determining fact and opinion (5.3% passing), plus the two aforementioned skills. Also noted was a comparatively high rate of achievement on the skill requiring the completion of forms (26.7% passing).

In general, a large variation in percentages of EMH students achieving or passing skills were included in the communication standard

(5.3% to 34.0% passing). Although this large variation was noted on individual skills, little success was noted in achieving the criterion for passing the standard (3.3% passing the standard).

Variation in the percentages of students achieving mathematics skills was not as great (see Table 12). While most skills were achieved by less than 10% of the sample of EMH students, the skill requiring the determination of equivalent amounts of currency was achieved by 25.3% of the students. Considering the stress placed on money manipulation, both educationally and practically, this high rate of achievement is not surprising and follows the trend of performance set by the other samples under investigation. Aside from this one skill, dealing with money, the sample of EMH students displayed poor skill achievement across the skills assessed on the mathematics standard with only 2.0% of the students achieving passing criterion.

While the experiences of one sample of EMH students on Florida's SSAT-II are not necessarily representative of performances and outcomes of EMH students elsewhere, the results reinforce concerns about the participation of these students in MCT programs. The findings of this investigation indicate that handicapped students in general, and the EMH students in particular, fared significantly poorer than did nonhandicapped students.

Again the question of modifications would appear to be of some concern. EMH students are offered three of the modifications permitted in the State of Florida (flexible scheduling, flexible setting, and modifications in the recording of answers). Would the inclusion of the other modifications lead to higher levels of mastery achievement?

What is the theoretical basis of the exclusion of the other modifications? Are other modifications in order, or are all modifications of little use? As evidenced by the performance of EMH students on this assessment of minimum competency, those modifications currently in place give little support to the validity of those modifications in improving mastery achievement of EMR students.

MacMillan and Barthwick (1980) are but two authors who state that mildly retarded students can reach academic goals, but due to the rate of learning, care should be taken in chosing those goals related directly to functional skills that assist the student in becoming independent. If SSAT-II (formerly functional literacy) is an assessment of the success of programs for EMH students that focused on independent living, then many questions are to be answered concerning the lack of success noted for this sample of EMH students. That is, if we accept the premise that programs for EMH students stress skills for independent living (Franzosa, 1984; MacMillan & Barthwick, 1980; Minsky et al., 1985) and the observation that MCTs are generally tests of practical application of functional/survival skills (Guerriro, 1978), then the programs currently in operation in the State of Florida appear to be unsuccessful. A full discussion of these types of concerns is not in the scope of this investigation. However, when comparing unsuccessful EMH students with their nonhandicapped peers on a measurement of basic skills, questions of appropriateness of special education programs becomes apparent.

Summary. There has been a growing trend for handicapped and nonhandicapped students to receive the same diploma upon completion of

their secondary education, despite the fact that their actual programs may have differed both in content and quality. If schools require students to meet certain competency standards and to pass a minimum competency test in order to receive a standard diploma, the impact on handicapped students may be overwhelming. Though the results of this comparative investigation are from only one state and one test administration, they do appear to indicate that one consequence of minimum competency testing programs could be a large percentage of handicapped students who do not receive a standard high school diploma. Among the many issues surrounding this educational trend are the nature and extent of accommodation afforded to exceptional students (Morrissey, 1980), the possible inclusion of MCT within the individual education plans (Danielson, 1980; Fenton, 1980), and the difficulty that schools have in assuring that pupils attain a given level of performance while providing for the special needs of handicapped students (Ross & Weintraub, 1980).

In the State of Florida many of these concerns are addressed by exempting most handicapped students from participation in the statewide student assessment program. This exemption, however, brings with it the elimination of the opportunity to receive a standard State of Florida diploma as the certificate of graduation. Those handicapped students not deciding to participate in the statewide student assessment program will qualify for a special State of Florida diploma. This certification is bona fide, in Florida, as a certificate of graduation, however, limited acceptance is available outside the state (Grise, 1980).

McClung and Pullin (1978) suggested that, in determining a competency standards policy for handicapped students, education agencies must decide whether the same or different diplomas will be issued to handicapped and nonhandicapped students. If the same diploma is to be awarded, the agencies must decide whether the same or different standards and assessment procedures will be required. There are various ramifications to each of these options.

This investigation into the Florida results appears to indicate that if the same diploma is issued upon meeting the same standards and using the same assessment procedures, many handicapped students will fail to attain a high school diploma, and thus could face difficulties in the job market (Franzosa, 1984; Hasazi et al., 1985). Such a standardized policy does, however, allow the school to insure that a diploma represents certain common, minimum skills among all graduates (Beard, 1979). To issue the same diploma but require different standards or use different assessment procedures for handicapped students can also be problematic. There is so much variation within the handicapped population that establishing standards across that population, or even within categories, is likely to be as unfair for some individuals as would be using the same standards or assessment procedures as those used with nonhandicapped students (Pullin, 1980).

It was the purpose of this study to consider those handicapped students in the State of Florida who desired a standard diploma and participated in the statewide assessment program. Within the investigation, specific attention was given to the comparison of the performance of three equal samples of mildly handicapped students and

one equal sample of nonhandicapped students on the State Student Assessment Test, Part II (SSAT-II).

A comparison of these four samples of students and the significant interactions between categories and responses gave issue to questions concerning the validity of test modifications offered to these handicapped students. That is, if the modifications are successful or beneficial to the handicapped students, it would seem that the students would perform at levels that approximated the performance of the sample of nonhandicapped students. This level of performance was not achieved by any of the individual samples of handicapped students included in this research.

The major findings of this study included the apparent poor showing of three large samples of mildly handicapped students in general, and the sample of EMH students in particular. More precisely, handicapped students scored lower on the skills included in the SSAT-II and were less likely to attain the requisite level of academic mastery required prior to graduation when compared to nonhandicapped students. These findings were supported by similar performance levels of mildly handicapped students in North Carolina reported by Serow and O'Brien (1983). In light of the evidence gathered in this investigation, with support from the North Carolina study, it is reasonable to question whether EMH students benefit in any meaningful way from their participation in MCT programs. Even with modifications in the administration of the test, it appears obvious that if exceptional students are to be included in MCT programs, they must be provided with extensive instructional

and remedial resources needed to boost them to the level required for receipt of the standard diploma. There also remains the larger question of whether MCT is an appropriate vehicle for identifying and remediating those academic deficiencies associated with certain types of exceptionalities (Ewing & Smith, 1981).

In the case of students whose handicap does not entail a basic inability to perform at or near grade level, MCT may be useful. Students included in the samples classified as SLD and EH whose performance approached their nonhandicapped peers would appear to be included in this group. However, EMH students seem to be quite a different matter, in view of the findings of this investigation, it appears reasonable to conclude that most EMH students are not able to attain the requisite level of competence even when modifications are employed. The continued participation of EMH students in MCT programs may be not only pointless but even harmful to their social and psychological development (Harris et al., 1986; Patton et al., 1986). Previous research has found that while demonstration of academic competence by retarded students can build self-acceptance and acceptance by peers, demonstrations of academic deficiency may reinforce stigma and set exceptional students apart from their classmates (Gottlieb, Semmel, & Veldman, 1978; Minsky et al., 1985).

Various alternatives to comprehensive MCT of the handicapped have been suggested and include separate (and lower) test standards for exceptional students and determination of competency on the basis of successful completion of the individual educational plan (Ross & Weintraub, 1980). Another option would be the exemption of nearly all

categories of exceptionality. However, in light of the findings of successful performance by significant numbers of students classified as EH and SLD in this investigation, such sweeping exemptions may not be necessary. Instead, perhaps the fairest and most realistic policy would be to exempt only those students classified as mentally handicapped. Unless states come to acknowledge the disadvantages of including EMH students within MCT programs, it can be anticipated that the negative consequences of such programs will continue to fall disproportionately on those students classified as educable mentally handicapped.

Implications for Research

In 1976, the Florida Legislature required all students to master (SSAT-I) and apply (SSAT-II) specified minimum performance standards in reading, writing, and mathematics in order to receive a standard State of Florida diploma (Grise, 1980). Although modifications in test format have been made to accommodate certain handicaps, handicapped students are tested and expected to achieve mastery on the same content as regular education students. A comparison of this achievement of mastery for three equal samples of handicapped students and one equal sample of nonhandicapped students was the issue addressed in this investigation. The stated purpose of the Florida Statewide Assessment Program is to collect and report information about students' achievements on selected basic and practical skills in order to make improved decisions on education policies and practices. If Florida pursues this purpose, then it becomes apparent that future research addressing these populations is warranted.

Recommendations for future research based on the results of this study include the following:

1. A longitudinal investigation from a student's first experience in the statewide assessment program (grade 3) through his/her final attempt to master and apply those skills on the State Student Assessment Test, Part II (at the 10th grade until the student passes the test or leaves school) would give some indication if passing or failing preceeding assessments are an indication of success or failure on the SSAT-II.

2. A historical investigation of those handicapped students who are successful (pass) on the SSAT-II should be conducted to document their performance on previous assessments. This could give indications as to differences among assessments in order to make decisions concerning when, in students' educational careers, difficulties began to appear.

3. An investigation into the types of individual program in which successful students have been enrolled would provide valuable information on types of programs. That is, information should be obtained indicating whether successful students are more likely to have been enrolled in self-contained classes, part-time programs, or resource room programs.

4. An investigation of the rate of students passing SSAT-I compared to rate of students passing SSAT-II should be undertaken to document the SSAT-I as an indicator of success on the SSAT-II.

5. An investigation into the validity of those modifications currently in place in the State of Florida with particular note to

other options in format currently in use in other states (see Appendix B).

6. A replication of a 1983 study (Serow & O'Brien) using data from the North Carolina Competency Test, that sampled handicapped and nonhandicapped students and compared them on their initial MCT performance, participation in remediation, improvements in subsequent MCT, and eligibility for receiving standard high school diplomas should be undertaken in Florida. This type of research would give indications as to the success or failure of remedial programs.

7. An investigation into the necessity of a regular high school diploma for mildly handicapped students, at entry level employment, should be undertaken to document the importance of such certification in reference to available positions as perceived by employers.

Continued research efforts designed to gather, document, and consequently improve the performance of mildly handicapped and nonhandicapped students on Florida's MCT would add to the validity of the test instrument and assure students the opportunity of success.

APPENDIX A
ELIGIBILITY CRITERIA FOR SPECIAL EDUCATION PLACEMENT

Alachua County

Emotionally Handicapped

Emotionally Handicapped--one, who after receiving supportive educational assistance and counseling services available to all students, still exhibits a persistent and consistent severe emotional handicap which consequently disrupts the student's own learning process. This is the student whose inability to achieve adequate academic progress or satisfactory interpersonal relationships cannot be attributed primarily to physical, sensory, or intellectual deficits. This term does not include children who are socially maladjusted unless it is determined that they are also emotionally handicapped.

Severely Emotionally Disturbed--one who meets the criteria stated above and, in addition, requires a special program for the full school week and extensive supportive services.

1. Criteria for Eligibility
   a. Emotionally Handicapped
      (1) Evidence that the student, after receiving appropriate supportive educational assistance and counseling, still exhibits a severe emotional handicap.

(2) Evidence that the student exhibits a persistent and consistent severe emotional handicap as determined by documented observations and psychological evaluation.

(3) Evidence that the behavior disrupts the student's ability to achieve adequate academic progress or develop satisfactory interpersonal relationships.

(4) Evidence that the primary problem of the student cannot be attributed primarily to physical, sensory, or intellectual deficits.

Educable Mentally Handicapped

Educable Mentally Handicapped--one who is mildly impaired in intellectual and adaptive behavior and whose development reflects a reduced rate of learning. The measured intelligence of an educable mentally handicapped student generally falls between two (2) and three (3) standard deviations below the mean, and the assessed adaptive behavior falls below age and cultural expectations.

1. Criteria for Eligibility

b. Educable Mentally Handicapped

(1) The measured level of intellectual functioning, as determined by performance on an individual test of intelligence, is between two (2) and three (3) standard deviations below the mean. The standard error of measurement may be considered in individual cases. The profile of intellectual functioning shows consistent subaverage performance in a majority of areas evaluated.

(2) The assessed level of adaptive behavior is below age and cultural expectations.

(3) Subaverage performance on a standardized measure of academic achievement is demonstrated.

Specific Learning Disabilities

Specific Learning Disabilities--one who exhibits a disord-r in one (1) or more of the basic psychological processes involved in understanding or in using spoken and written language. These may be manifested in disorders of listening, thinking, reading, talking, writing, spelling, or arithmetic. They do not include learning problems which are due primarily to visual, hearing, or motor handicaps, to mental retardation, emotional disturbance, or to an environmental deprivation.

1. Criteria for Eligibility

c. Specific Learning Disabled

(1) Evidence of a disorder in one (1) or more of the basic psychological process areas. Basic psychological process areas include visual, auditory, motor, and language processes. Only tests or subtests appropriate for the student's chronological age shall be used for placement purposes. Hereafter, the Illinois Test of Psychological Abilities shall be abbreviated as ITPA; the Detroit Tests of Learning Aptitude as DTLA. Required batteries appropriate to age and by process cluster are as follow:

(a) Chronological ages 5.0 through 10.0

Visual Cluster

ITPA Reception
ITPA Association

ITPA Closure
ITPA Memory
ITPA Manual Expression

Auditory Cluster

ITPA Reception
ITPA Association
ITPA Grammatic Closure
ITPA Memory
ITPA Verbal Expression

Visual Motor Cluster

Beery Developmental Test of Visual-Motor Integration
Bender Motor Gestalt Test

(b) Chronological ages above 10.0

Visual Cluster

DTLA Memory for Objects
DTLA Memory for Letters
DTLA Disarranged Pictures

Auditory Cluster

DTLA Memory for Words
DTLA Memory for Sentences
DTLA Verbal Opposites
DTLA Likeness and Differences

Visual Motor Cluster

Beery
DTLA Memory for Design
DTLA Motor Speed

Cluster scores shall be averaged and disorders shall be defined according to the instructions of each test's author(s).

(2) Evidence of academic achievement which is significantly below the student's level of intellectual functioning.

(a) For students below age seven (7), evidence must be presented that the student exhibits a discrepancy of

one standard deviation or more between an intellectual standard score and an achievement standard score(s) in thinking, reading, talking, writing, spelling, or arithmetic. Students with deficits in reading and/or arithmetic may be considered for exceptional student placement if other applicable criteria are met. Students with deficits in other areas may be offered consultative services.

(b) For students ages seven (7) through ten (10), evidence must be presented that the student exhibits a discrepancy of one (1) standard deviation or more between an intellectual standard score and academic standard score(s) in reading, writing, arithmetic, or spelling.

(c) For students ages eleven (11) and above, evidence must be presented that the student exhibits a discrepancy of one and one-half (1½) standard deviations or more between an intellectual standard score and academic standard score in reading, writing, arithmetic, or spelling.

(d) For students ages seven (7) and above with deficits in reading and/or arithmetic, exceptional student placement may be considered if other applicable criteria are met. Students with deficits in other areas may be offered consultative services.

(e) If more than one academic instrument is used to document a weakness, the results must consistently show deficits

in the same academic area. If more than one level of functioning is obtained, the mean level of functioning will be used to establish a deficit.

(f) For eligible students functioning at or above their current grade levels, consultative services may be offered.

(3) Evidence that learning problems are not due primarily to other handicapping conditions.

(a) For students with intellectual deficits, evidence that intellectual functioning is no more than one (1) standard deviation below the mean on an individual test of intellectual functioning or evidence that a score below one (1) standard deviation below the mean is not a reliable indicator of the student's potential. Intellectual functioning will be determined by the use of the full scale score derived from the standard battery instrument.

(b) For students with visual processing deficits, evidence that visual acuity is at least 20/70 in the better eye with best possible correction, or evidence that the student's inability to perform adequately on tasks which require visual processing is not due to poor visual acuity.

(c) For students with auditory processing or language deficits, evidence that the loss of auditory acuity is not more than 30 decibels in the better ear unaided or evidence that the student's inability to perform

adequately on tasks which require auditory processing of language is not due to poor auditory acuity.

(d) For students with a motor handicap, evidence that their inability to perform adequately on tasks which assess the basic psychological processes is not due to the emotional handicap.

(4) Documented evidence which indicates that general educational alternatives have been attempted and found to be ineffective in meeting the student's educational needs.

Broward County

Emotionally Handicapped

An emotional handicap is defined as a condition resulting in persistent and consistent maladaptive behavior, which exists to a marked degree, which interferes with the student's learning process, and which may include but is not limited to any of the following characteristics:

(a) An inability to achieve adequate academic progress which cannot be explained by intellectual, sensory, or health factors.

(b) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.

(c) Inappropriate types of behavior or feelings under normal circumstances.

(d) A general pervasive mood of unhappiness or depression; or

(e) A tendency to develop physical symptoms or fears associated with personal or school problems.

Students with disruptive behavior shall not be eligible unless they are also determined to be emotionally handicapped.

Eligibility Criteria

1. Emotionally Handicapped - A student is eligible for a special program for emotionally handicapped if there is evidence that:
   A. The student, after receiving supportive educational assistance and counseling services, available to all students, still exhibits an emotional handicap;
   B. An emotional handicap exists over an extended period of time and in more than one situation;
   C. The emotional handicap interferes with student's own learning, reading, arithmetic, or writing skills, social-personal development, language development or behavioral progress and control; and
   D. When intellectual, sensory, or physical deficits exist, they are addressed by other appropriate interventions or special programs.
   E. Age of student

      In keeping with federal and state legislation, the Broward County School System may provide exceptional student services to eligible students from five up through their twenty-second birthday. A student who meets eligibility criteria may be enrolled at any time prior to his twenty-second birthday. Exceptional students who are awarded a standard or special diploma prior to their twenty-second birthday are no longer eligible for special education and related services.

Specific Learning Disabilities

A specific learning disability is defined as a disorder in one (1) or more of the basic psychological processes involved in understanding or in using spoken or written language. Disorders may be manifested in listening, thinking, reading, talking, writing, spelling, or arithmetic. Such disorders do not include learning problems which are due primarily to visual, hearing, or motor handicaps, to mental retardation, to emotional disturbance, or to an environmental deprivation.

Eligibility Criteria

1. A student is eligible for special programs for specific learning disabilities if the student meets all of the following criteria:
   A. Evidence of a disorder in one (1) or more of the basic psychological processes. Basic psychological process areas include visual, auditory, motor, and language processes.
      1. Documentation of process disorder must include one (1) standardized instrument in addition to the instrument used to determine the student's level of intellectual functioning.
      2. In addition, a district may establish criteria for the use of more than one (1) instrument to determine a process disorder and other criteria which will assist in determining a process disorder. In Broward County, when confirming auditory process disorder, an instrument(s) other than the Detroit Test of Learning Aptitudes, Subtests #6 and #13 must be used. Process disorders must be substantiated by classroom observations and, as appropriate, work samples.

B. Evidence of academic achievement which is significantly below the student's level of intellectual functioning.

1. For students below age seven (7), evidence must be presented that the student exhibits a significant discrepancy between levels of intellectual functioning and achievement on tasks required for listening, thinking, reading, talking, writing, spelling, or arithmetic. A significant discrepancy is defined as a difference of one standard deviation or more between an intellectual standard score and preacademic or language standard scores. When standard scores are not available, a pattern of academic/preacademic or language deficits which is inconsistent with the student's intellectual level, must be documented by the following:

- classroom observations
- work samples (as appropriate)
- anecdotal records (as appropriate)
- individually administered readiness, achievement (norm or criterion referenced) and/or language tests.

When measuring:

- reading both word recognition and comprehension must be measured.
- spelling you must test using dictation.
- arithmetic tests must measure computational skills.
- writing tests must measure written language.

When a student demonstrates an academic deficit in spelling only, the student will remain in the regular program and will be served through consultation as necessary.

2. For students ages seven (7) through ten (10), evidence must be presented that the student exhibits a discrepancy of one

(1) standard deviation or more between an intellectual standard score and academic standard score in reading, writing, arithmetic, or spelling.

3. For students ages eleven (11) and above, evidence must be presented that the student exhibits a discrepancy of one and one-half (1½) standard deviations or more between an intellectual standard score and academic standard score in reading, writing, arithmetic, or spelling.
4. A district may establish criteria for the use of more than one (1) instrument to determine a deficit area, and other criteria which will assist in determining an academic deficit.
5. A specific learning disabled student's profile of strengths and weaknesses indicates a pattern as opposed to a relatively flat profile of learning aptitudes, psychological processes, and academic achievement.

C. Evidence that learning problems are not due primarily to other handicapping conditions.

1. For students with intellectual deficits, evidence that intellectual functioning is no more than two (2) standard deviations below the mean on an individual test of intellectual functioning or evidence that a score below two (2) standard deviations below the mean is not a reliable indicator of the student's intellectual potential.
2. For students with visual processing deficits, evidence that visual acuity is at least 20/70 in the better eye with

the best possible correction or evidence that the student's inability to perform adequately on tasks which require visual processing is not due to poor visual acuity.

3. For students with auditory processing or language deficits, evidence that loss of auditory acuity is no more than thirty (30) decibels in the better ear unaided or evidence that the student's inability to perform adequately on tasks which require auditory processing or language is not due to poor auditory acuity.
4. For students with a motor handicap, evidence that their inability to perform adequately on tasks which assess the basic psychological processes is not due to the motor handicap.
5. For students with an emotional handicap, evidence that their inability to perform adequately on tasks which assess the basic psychological processes is not due to their emotional handicap.

D. Documented evidence which indicates that general educational alternatives have been attempted and found to be ineffective in meeting the student's educational needs.

E. Age of students

In keeping with federal and state legislation, the Broward County School System provides exceptional student services to eligible state approved kindergarten entry age students (SBP 6GX6-5.1) up through and until the end of the school year in which their twenty-second birthday occurs. A student who

meets eligibility criteria may be enrolled at any time through their twenty-second birthday if the student is twenty-one on the first day of school of the current school year. Exceptional students who are awarded a standard or special diploma or certificate of completion up to or through their twenty-second birthday are no longer eligible for special education and related services.

Educable Mentally Handicapped

One who is mildly impaired in intellectual and adaptive behavior and whose development reflects a reduced rate of learning. The measured intelligence of an educable mentally retarded student generally falls between two (2) and three (3) standard deviations below the mean and the assessed adaptive behavior falls below age and cultural expectations.

Eligibility Criteria

1. Criteria for a special program for the mentally retarded as required by Rule 6A-6.3011(2)(2)-(c), FAC, are as follows:
   A. the measured level of intellectual functioning, as determined by performance on an individual test of intelligence, is two (2) or more standard deviations below the mean. The standard error of measurement may be considered in individual cases. The profile of intellectual functioning shows consistent subaverage performance in a majority of the areas evaluated;
   B. the assessed level of adaptive behavior falls below age and cultural expectations;
   C. subaverage performance on an individually administered standardized test of academic achievement for the appropriate

age level is demonstrated. A behavioral observation or criterion referenced test for a student whose level of functioning is not appropriately measured by an academic test may be substituted.

D. Age of student

In keeping with federal and state legislation, the Broward County School System may provide exceptional student services to eligible students from five up through their twenty-second birthday. A student who meets eligibility criteria may be enrolled at any time prior to his twenty-second birthday. Exceptional students who are awarded a standard or special diploma prior to the twenty-second birthday are no longer eligible for special education and related services.

APPENDIX B
STATE OF FLORIDA RULES

6A-1.943 Modification of test instruments and procedures for exceptional students. Each school board shall implement appropriate modifications of the test instruments and test procedures established for high school graduation pursuant to Rule 6A-1.942, FAC, for exceptional students within the limits prescribed herein.

(1) Such modifications shall include:

(a) Flexible scheduling. The student may be administered a test during several brief sessions, so long as all testing is completed by the final allowed test date specified by the Commissioner.

(b) Flexible setting. The student may be administered a test individually or in a small group setting by a proctor rather than in a classroom or auditorium setting.

(c) Recording of answers. The student may mark answers in a test booklet, type the answers by machine, or indicate the selected answers to a test proctor. The proctor may then transcribe the student's responses onto a machine-scorable answer sheet.

(d) Revised format. The student may use a large print booklet, a Braille test booklet, or a magnifying device.

(e) Auditory aids. The student may use audio devices. A tape recorded version of appropriate portions of the test may be used, along

with printed copy. Appropriate portions of the test may also be read to the student by a narrator. However, no portion of a test which is specifically designed to measure reading skills may be tested through use of audio aids.

(2) The following modifications are authorized, when determined appropriate by the superintendent or his or her designee, for any student who has been properly evaluated and classified, pursuant to Rule 6A-6.331, FAC, in one (1) or more of the exceptional student categories below:

(a) Mentally retarded:

1. Flexible scheduling
2. Flexible setting
3. Recording of answers

(b) Specific learning disabled:

1. Flexible scheduling
2. Flexible setting
3. Recording of answers
4. Revised format
5. Auditory aids

(c) Visually impaired:

1. Flexible setting
2. Recording of answers
3. Revised format
4. Auditory aids
5. Flexible scheduling

(d) Hearing impaired: None

(e) Physically impaired:

1. Flexible scheduling
2. Flexible setting
3. Recording of answers
4. Revised format

(f) Emotionally handicapped:

1. Flexible scheduling
2. Flexible setting

3. Recording of answers
4. Revised format

(g) Speech and language impaired: None

(h) Gifted: None

(i) Hospitalized and homebound:

1. Flexible scheduling
2. Flexible setting
3. Recording of answers
4. Auditory aids

(3) In no case shall the modifications authorized herein be interpreted or construed as an authorization to provide a student with assistance in interpreting or solving any test item.

(4) The division of public schools shall develop the modified test instruments required herein, and provide technical assistance to school districts in the implementation of modified instruments and the determination of appropriate modifications for individual students.

232.247 Special high school graduation requirements for certain exceptional students. A student who has been properly classified, in accordance with rules established by the state board, as "educable mentally retarded," "trainable mentally retarded," "deaf," "specific learning disabled," or "emotionally handicapped" shall not be required to meet all requirements of 232.246 and shall, upon meeting all applicable requirements prescribed by the school board pursuant to 232.245, be awarded a special diploma in a form prescribed by the state board; provided, however, that such special graduation requirements prescribed by the school board shall include minimum graduation requirements as prescribed by the state board. Nothing provided in

this section, however, shall be construed to limit or restrict the right of an exceptional student solely to a special diploma. Any such student shall, upon proper request, be afforded the opportunity to fully meet all requirements of 232.246 through the standard procedures established therein and thereby qualify for a standard diploma upon graduation.

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W. Bee Crews is a native Floridian. He received his B.S. in special education from Florida State University in 1970, after which he accepted a position as supervising teacher at Sunland Training Center in Fort Myers, Florida.

At Florida State University in 1972, Bee was awarded an M.S. in special education with an emphasis on varying exceptionalities and administration. Upon completing his degree, he became a public school teacher. During his tenure as a public school teacher, he worked in a variety of settings from itinerant teacher in specific learning disabilities to department chairman of a high school special education department.

Bee continued his interest in mildly handicapped secondary students during his doctoral program at the University of Florida. With his Ph.D. in special education, he intends to advance his career in college teaching and pursue professional interests in his current position at Auburn University.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Stuart E. Schwartz, Chairman
Professor of Special Education

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